DOCUMENT RESUME

ED 347 288 CE 061 441

TITLE	Integrating Basic Skills with Technical/Vocational Instruction. Workshop Participant Handouts.
INSTITUTION	Northeast Texas Community Coll., Mount Pleasant.
SPONS AGENCY	Texas Higher Education Coordinating Board, Austin.
PUB DATE	91
NOTE	171p.
PUB TYPE	Guides - Classroom Use - Teaching Guides (For Teacher) (052)
EDRS PRICE	MF01/PC07 Plus Postage.
DESCRIPTORS	*Academic Education; *Basic Skills; Inservice Teacher Education; *Instructional Materials; *Integrated Curriculum; Material Development; Postsecondary Education; Secondary Education; Skill Development; *Teaching Methods; *Vocational Education; Vocational Education Teachers; Workshops

ABSTRACT

This document contains handout materials for workshops on integrating basic skills with technical and vocational education courses. A general section lists findings from a review of literature and four instructor competencies needed in integrated programs. Materials are grouped according to the three tasks of the project. For Task I, which was to develop materials related to two basic skills encompassed by two tasks, the following materials are provided: instructor's roles; relations of occupations to divisions, competencies, and tasks; course outlines; task analysis worksheet; course outline format; Texas Educational Assessment of Minimum Skills; crosswalk of prerequisite academic skills; prerequisite skills for postsecondary programs and common core skills; and worksheet for identifying basic skills. For Task II, which was to identify the relationship of basic skills to occupational tasks, the materials include handouts on combining academic and vocational teachers, worksheet for application of basic skills, and sample occupation-to-lessons matrices. For Task III, which involved developing instructional materials that help students understand the application of basic skills to occupational tasks, the handouts include pretests and posttests, 32 instructional activities, and a worksheet for activities showing the relationship of basic skills to occupational tasks. A bibliography listing 202 items completes the packet. (KC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

TX91PD38
#11120005

ED347288

WORKSHOP PARTICIPANT HANDOUTS

INTEGRATING BASIC SKILLS

WITH

TECHNICAL/VOCATIONAL INSTRUCTION

Conducted by
Northeast Texas Community College
Dr. Eugenia Travis, Project Director

1990-1991

CE061441

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

BEST COPY AVAILABLE

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

INTEGRATING BASIC SKILLS

WITH

TECHNICAL/VOCATIONAL INSTRUCTION

Conducted by
Northeast Texas Community College

Project Staff

Dr. Jack Foreman - Project Administrator
Northeast Texas Community College

Dr. Eugenia Travis - Project Director
Northeast Texas Community College

Dr. Wilburn (Wil) Watson - Researcher
Northeast Texas Community College

Dr. Bill Lovelace - Consultant
University of North Texas

Dr. Betty Peace - College Credit Consultant
East Texas State University

Dr. Gloria Ann Lopez - Staff Advisor
Texas Higher Education Coordinating Board

Mrs. Shirley Smoak - Secretary
Northeast Texas Community College

1990-1991

This project funded in part by the Texas Higher Education Coordinating Board through the Carl D. Perkins Vocational Education Act, Model Professional Development Project Number 11120005.

Table of Contents

Title	Handout #
Findings From the Review of the Literature	T1-1
Four Instructor Competencies	T1-2
Task I	
Task I Objective	T1-3
Instructor's Primary and Secondary Roles	T1-4
Relationship of Occupation to Divisions and Competencies	T1-5
Relationship of Occupation and Division to Tasks	T1-6
Section of a Course Outline (Task 1)	T1-7
Section of a Course Outline (Task 2)	T1-8
Example of Task Analysis Worksheet	T1-9
Example of Basic Course Outline Format	T1-10
Texas Educational Assessment of Minimum Skills	T1-11
Crosswalk of Prerequisite Academic Skills	T1-12
Prerequisite Skills Common to 71 Postsecondary Voc. Programs	T1-13
Prerequisite Skills in Addition to Common Core Skills	T1-14
Worksheet for Identifying Basic Skills	T1-15
Task II	
Task II Objective	TII-1
Combining Academic and Vocational Teachers	TII-2
Worksheet for Application of Basic Skills	TII-3
Occupation to Lesson Matrices (example)	TII-4
Task III	
Task III Objective	#1
Pre-Test	TIII-1
Post-Test	TIII-2
Instructional Activities	TIII-3
Worksheet for Activities Showing Relationship of Basic Skills to Occupational Tasks	TIII-4
Bibliography	TIII-5

Findings From The Review Of The Literature Which Support The Concept Of Integrating Basic Skills Instruction And Technical/Vocational Instruction

- Empirical evidence indicates that the application of logic and assignment of specific tasks to students can enhance the transfer of knowledge. Another aspect of this transfer is the concurrent use of mathematics, communications, interpersonal relations, and reasoning skills across vocational areas.

- Instructors should demonstrate to students how specific academic skills apply to specific occupational skills.

- Instructors should strive to help students realize that academic skills are transferable to many occupational areas.

- The thinking and problem solving skills of adults can be developed more readily if they can comprehend the relationships between what they are learning and how the learning can be used.

- Students who understand the application of the basic skills are far more likely to remember and use the basic skills effectively than if they rely on rote memorization.

- Research recommends the use of teaching strategies that cause the content being taught and the application of the content for specific purposes to be presented concurrently.

- At the community college level academic and technical/vocational courses should be sequenced to provide for the development of basic skills that are prerequisite to specific courses of occupational instruction.

- Counselors and instructors must inform students of the purpose and values of prerequisite and concurrent "academic" courses for technical/vocational courses.

- Math-related courses make surprisingly large contributions to developing math proficiency. These results provide strong evidence that the teaching of math can be improved through application.

- The National Assessment of Vocational Education has empirically tested the idea that high school vocational education contributes to the students' academic skills and assessed its potential for a greater contribution to the development of their academic skills.

- Since individuals have different learning styles, some students may learn academics more easily in an applied context.

- The main emphasis of current adult education technology is in the direction of developing instructional strategies for involving the adult students in an ever-deeper process of self-diagnosis of their own needs for continued learning.

- Integrating basic skills with vocational education is restructuring the delivery of instruction in such a manner that students connect the basics to real-world applications and apply the basics in vocational courses.

- Competency Comprehension This principle of instruction deals with an instructor's familiarity with the competency to be taught. The more clearly an instructor comprehends a competency being taught, the more likely that students will achieve the competency.

Four Instructor Competencies Essential To The Integration Of Basic Skills And Technical/Vocational Instruction

- Ability to modify unusual behavior of students which may have resulted in academic failure.
- Ability to remove the perceived false assumptions regarding the level of basic skills needed for success in the technical/vocational program (courses).
- Ability to identify the level of basic skills needed by students to master the technical/vocational instruction in which they can succeed.
- Ability to identify the level of basic skills needed by students to master specific technical/vocational instruction in which they are enrolled.

TASK I

Task 1 Objective

Participant teams (one basic skills instructor and one occupational instructor per team) will identify two basic skills used in the performance of two occupational tasks performed by a student in an occupational course. The two tasks for which the two basic skills are to be identified will be selected by the occupational instructor. This task will be performed using (1) the instructions provided by the workshop presenter; (2) lesson plans and/or course outlines of the occupational team member; and (3) the worksheet provided by the workshop staff. A minimum of two basic skills for each of the two selected tasks shall be identified and written on the worksheet. Thirty minutes will be allowed for the completion of this task.

Occupation: Instructor
Technical/Vocational Education

Occupational Divisions (Roles, Functions, Duty Areas)

Program Planning, Development, and Evaluation 1	Instructional Planning 1	Instructional Execution 1	Instructional Evaluation 1	Instructional Management 1	College-Community Relations 1

Professional Role and Development 1	Serving Students With Special Needs 2	Assisting Students In Improving Their Basic Skills 2	Assisting Students In Career Development (Guidance) 2	Implementing Competency-Based Instruction 2

1. Primary Roles (Function-Duty Areas)
2. Secondary Roles (Function-Duty Areas)

RELATIONSHIP OF OCCUPATION TO DIVISIONS AND COMPETENCIES

Occupation
(Position of employment)

Occupational Division 1 (Duty Area)	Occupational Division 2 (Duty Area)	Occupational Division 3 (Duty Area)	Occupational Division 4 (Duty Area)	etc.
Competencies	Competencies	Competencies	Competencies	
1.	1.	1.	1.	
2.	2.	2.	etc.	
3.	3.	3.		
4.	4.	4.		
etc.	etc.	5.		
		6.		
		etc.		

Relationship of Occupation and Division to Competencies and Tasks

Occupation
Electronics

Occupational
Division
Television Repairman

Competency 1

A. Determine wire size
B. Determine fuse size

Tasks

1. Using a wiring diagram, the student will determine wire size with 90 percent accuracy.

2. Using a wiring diagram, the student will determine fuse size with 90 percent accuracy.

Competency 2

A. Record tester readings
B. Record meter readings

Tasks

1. Using testers, the student will record on the attached form the appropriate readings with 100 percent accuracy.

2. Using meters (V.O.A.), the student will record on the attached form the appropriate readings with 100 percent accuracy.

Section of a Course Outline (walk through example)

Course Title:

Occupational Task	Theory or Related Information	Communication Skills	Mathematical Skills
1. Using wiring diagrams, the student will determine wire and fuse sizes with 90% accuracy	A. Safe installation of electrical accessories and liability B. Wire size chart C. Fuse capacity chart D. Color coding E. Diagrams/Schematics	A. Find, read, and understand information written on the 12th grade level B. Use a thesaurus C. Use appropriate definition for words with more than one meaning D. Carry out correctly written or oral instructions E. Read and interpret job-related forms F. Read and understand short notes, memos and letters G. Read and understand graphs, charts, and tables	A. Write whole numbers from written text (six thousand three = 6003) B. Use arithmetic operations to solve word problems with whole numbers C. Perform arithmetic operations using correct hierarchy D. Translate a mixed number into improper fraction and reverse E. Read and write percents F. Compute percents G. Use concepts of percent, base and rate

Section of a Course Outline (walk through example)

Course Title:

Occupational Task	Theory or Related Information	Communication Skills	Mathematics Skills
2. Using meters (V.O.A.) and testers, the student will record on the attached form the appropriate readings with 100% accuracy	A. Voltmeter 1. Theory of operation 2. Meter connections 3. Uses B. Ammeter 1. Theory of operation 2. Meter connections 3. Uses C. Ohm meter 1. Theory of operation 2. Meter connections 3. Uses D. Safety precautions E. Induction meters F. Voltage probe G. Continuity tester	A. Find, read and understand information written on the 12th grade level B. Use a thesaurus C. Use appropriate definition for words with more than one meaning D. Carry out correctly written or oral instructions E. Read and interpret job-related forms F. Read and understand short notes, memos and letters	A. Write whole numbers from written text (six thousand three = 6003) B. Use arithmetic operations to solve word problems with whole numbers C. Perform arithmetic operations using correct hierarchy

Example of Worksheet Used In Performing A Task Analysis

Occupational Division: _____ Course Title: _____

Competency #: _____ Competency Statement: _____

Task #: _____ Task Statement: _____

Steps	Tools, Equipment, Materials	Theory or Related Information	Safety	Attitude - Ethics
List each step, manipulative activity, essential to performing the task	List all tools, equipment and/or materials needed to perform the task	1. List all information, theory or related, needed to perform the task. the task. 2. List academic skills - math, English, science that will be used. Identify academic skills that should have been acquired previous to learning the task and those which should be developed concurrently with the learning of the task.	List knowledge or practice needed for a safe performance of the task. Safety in relation to the individual performing task and safety to or of the object for which the task is being performed. Legal safety requirements.	(List attitudes and or ethics critical to the performance of the task)

One Example of a Format for a Basic Course Outline

Occupation: Instructor of postsecondary technical/vocational program. Functional Area: Plan, implement, and evaluate Competency-Based Instruction.

Competency: Conduct an Occupational Analysis. Task: Identify and list competencies for one course of the program.

Task Instructional Objective: Using the results of an occupational analysis, list the competencies of one occupational course of the technical/vocational program which you teach. Your performance of this task will be evaluated jointly by you and a workshop resource person by comparing your list of competencies with a list of competency statement characteristics.

Instructional Content	Information and Skills to be Acquired	Students-Instructor Activities	References	Evaluation
Identifying and listing course competencies	Information 1. Fundamentals of identifying and listing occupational competencies	Instructor Present instructional content using lecture, transparencies, and student information sheets	Student Information Sheets Organizing the content for a CBE Program: Module K-2	Each workshop participant will, during the workshop, list the competencies of one occupational course. A relationship of the competencies for course must be made with the divisions of the occupation and one task of any one of the occupations.
	Skills 1. Select course 2. Review results of occupational analysis 3. List competencies for course	Instructor Demonstration	Course syllabus Basic course outline Program curriculum job or task inventories of occupation for which instruction is offered	
		Student Performs skills 1, 2, and 3		

TEXAS EDUCATIONAL ASSESSMENT OF MINIMUM SKILLS

GRADE 9 READING

List of Objectives

Skill Area: Main Idea

Objective 1. Identify the main idea.

Skill Area: Word Meaning

Objective 2. Identify the meaning of words with academic and practical applications.

Skill Area: Detail

Objective 3. Identify specific details.

Objective 4. Identify the sequence of events.

Skill Area: Inference

Objective 5. Draw logical conclusions.

Objective 6. Distinguish between fact and opinion.

Objective 7. Identify cause-and-effect relationships.

Objective 8. Identify an accurate generalization from a given series of details and/or assumptions.

Objective 9. Identify the author's point of view and/or purpose.

Skill Area: Reference Usage

Objective 10. Identify the appropriate reference source.

Objective 11. Use graphic sources to get information.

OBJECTIVES AND MEASUREMENT SPECIFICATIONS

SKILL AREA: MAIN IDEA

Objective 1

Identify the main idea.

Description of Test Items

1. A test item will consist of an untitled boxed reading selection followed by the question eliciting the main idea.

2. The selection will develop one main idea. The main idea will be implied and supported by topic sentences and/or details in the selection.

Description of Answer Choices

1. Each answer choice will be a single sentence related to the content of the reading selection. Answer choices will be no more than 20 words in length.

2. The correct answer for an item will be the statement that is accurate, relevant, and of the most appropriate scope in relation to the other answer choices. For a selection in which the main idea is stated in one sentence, the correct answer will paraphrase the main idea sentence from the selection. For a selection in which the main idea is implied, the correct answer will represent that implied main idea.

3. An incorrect answer choice may be one of the following types:

   a. contradicted, that is, a statement that is contradicted by information in the selection,

   b. inappropriate in scope, that is, a statement that is (1) too narrow, hence, does not account for all the important information in the selection, or (2) too broad, hence, accounts for a more general viewpoint than is presented in the selection, or

   c. irrelevant, that is, a statement that introduces information not included in the reading selection but contains at least one concept from the selection.

4. Each set of answer choices will include incorrect answer choices from at least two of the categories described in number 3 above.

Example of Test Item*

Read the following passage. Then answer the question.

> The late 1870's saw the growth of a peculiar industry in Texas. The bones of buffaloes killed for their hides were gathered and shipped off to large cities. There they were ground up to make fertilizer, to bleach sugar, and to make bone china. They were also cut into buttons.
>
> Many poor people became bone pickers. For about sixty years, they gathered piles of bones all over Texas to sell to dealers, who made a nice profit shipping the bones off on long wagon trains or on railroad cars. Thus, this bustling industry contributed to the development of railroads in the state.
>
> It took 100 buffaloes to make a ton of bones, and a ton sold for between eight and twenty-three dollars over the years. By the late 1930's, millions of dollars' worth of bones had been shipped out of Texas.
>
> There were several reasons that the Texas bone industry came to an end. The economy improved and people found that they could make more money doing other things. Though not many buffaloes remained in Texas, laws were passed forbidding the slaughter of buffaloes, and better sources of bone meal were found.

This passage is mostly about

A	how a big business lasted a short time	(correct answer)
B	how a business was totally dependent on the railroad	(contradicted)
C	how people who became bone pickers were never successful	(inappropriate in scope)
D	the bone industry business that had little economic importance to Texas	(contradicted)

* The example illustrates how the text of a selection may be used to measure the objective. The same selection and other items are used elsewhere to illustrate how one selection is be used to measure several objectives.

TEXAS EDUCATIONAL ASSESSMENT OF MINIMUM SKILLS

GRADE 9 WRITING

List of Objectives

Skill Area: Mechanics

Objective 1. Demonstrate knowledge of standard uses of capitalization.

Objective 2. Demonstrate knowledge of standard punctuation.

Objective 3. Recognize the correct spelling of commonly used words.

Skill Area: English Usage

Objective 4. Demonstrate knowledge of correct English usage.

Skill Area: Sentence Formation

Objective 5. Demonstrate the ability to distinguish complete sentences from fragments and/or run-ons.

Skill Area: Proofreading

Objective 6. Demonstrate the ability to proofread a written communication.

Skill Area: Organization/Appropriate Response to Purpose and Audience*

Objective 7. Write a composition to describe an object or picture.

Objective 8. Write a composition to tell how to do something.

Objective 9. Write a composition in which ideas/objects/places are classified according to specified criteria and described.

Objective 10: Write a composition in which a choice is made and reasons that would support the choice and convince a specified audience are presented.

Objective 11. Write a composition which discusses two opposing courses of action and is designed to convince a specified audience to follow one of those courses.

* Only one objective in this skill area will be measured each year.

OBJECTIVES AND MEASUREMENT SPECIFICATIONS

SKILL AREA: MECHANICS

Objective 1

Demonstrate knowledge of standard uses of capitalization.

Description of Test Items/Answer Choices

1. Four different word groups will be presented. Only one sentence will be correctly capitalized.

2. The correct sentence will illustrate correct capitalization of one or more of the following:

   a. the first word in a sentence,

   b. the pronoun "I,"

   c. names of persons,

   d. names of nationalities and languages,

   e. names of the days of the week,

   f. names of the months of the year,

   g. names of cities, states, countries, and particular places,

   h. titles of persons (limited to Dr., Mr., Mrs., and Ms.),

   i. names of holidays,

   j. capitalization of the salutation and the closing of a letter, and

   k. avoidance of unnecessary capitalization.

3. Incorrect sentences will illustrate one or more of the following errors:

   a. not capitalizing the first word in a sentence,

   b. not capitalizing the pronoun "I,"

   c. not capitalizing a person's name,

   d. not capitalizing the names of holidays, days of the week, months of the year, cities, states, countries, particular places, nationalities and languages, or the titles of persons,

CROSSWALK OF PREREQUISITE ACADEMIC SKILLS

Development of Document

With Several major studies relating basic skills to vocational education, it was felt that some commonality of the studies should be correlated in order that the postsecondary college professors of Texas could relate the various documents to the "Texas Academic Skills Program (TASP)." The TASP test is given to students entering postsecondary educational institutions to assess the students' prerequisite skills. The "Crosswalk of Prerequisite Academic Skills" (**handout TI-12**) was developed with the assistance of mathematic and language art professors. Their correlation of skills from various studies to the TASP allows for more authenticity of the transition. The aim of the document has been to show skills in terms of college entrance requirements. Skills in all columns except the GED column are related to college level prerequisite skills. The skill levels in the GED column are expressed in levels of 2 being grades 4-6, level 3 being grade 7-8, level 4 being grade 9-12, level 5 college 1-2. and level 6 being college 3-4. The explanation key is found at the end of each section of the document.

In viewing the various columns of the document one will see that they are divided horizontally showing correlation of the Vernon Regional Junior College study (VRJC), General Educational Development (GED) study, and the Fund for the Improvement of Postsecondary Education (FIPSE) study which are correlated to, column one, the Texas Academic Skills Program (TASP) study. Column two, "Prerequisite Skills for Postsecondary Vocational Programs, Vernon Regional Junior College (VRJC) will be used throughout the study by project staff in explaining the process of identification, development, and integration of components into vocational education curricula. The Texas Academic Skills Program skill statements are more general than the Vernon Regional Junior College skill statements; therefore, the more explicit skill statements of the Vernon Regional Junior College study were used throughout the development of the project.

The document is divided into three sections including I. Mathematics, II. Writing, and III. Reading. The various TASP statements are reflected on the following pages of the document. The TASP skill statements were printed as found in the document and include explanation statements. The skill statements found in the other columns were matched with the statements in the TASP column. In some of the columns corresponding to the TASP statement one will find the statements "no close match found."

Use of Document

The intended use of the Crosswalk of Prerequisite Basic Skills is to aid in the development of a curriculum which is reflective of occupational requirements in terms of levels of mathematics and language skills needed for successful performance on the job. The Crosswalk should be used in implementing the integration of basic skills to vocational education programs. This document can be shared with the public school program directors.

CROSSWALK OF PREREQUISITE ACADEMIC SKILLS

A FACULTY PROFESSIONAL DEVELOPMENT PROJECT

TARGETING THE INTEGRATION OF BASIC SKILLS INTO THE VOCATIONAL/TECHNICAL CURRICULA

Conducted by Northeast Texas Community College

Relating materials of Documents:

1. Prerequisite skills for Postsecondary Vocational Programs, Vernon Regional Junior College (V.R.J.C.)
2. Vocational Preparation and Occupations: Educational and Occupational Crosswalk, General Educational Development (G.E.D.)
3. Improvement for Undergraduate Education in Texas: College Level Competencies, Fund for the Improvement of Postsecondary Education (F.I.P.S.E.)

To: Texas Academic Skills Program (T.A.S.P.)

A FACULTY PROFESSIONAL DEVELOPMENT PROJECT
TARGETING THE INTEGRATION OF BASIC SKILLS INTO THE VOCATIONAL/TECHNICAL CURRICULA
Conducted by Northeast Texas Community College

I. MATHEMATICS CROSSWALK OF SKILL DESCRIPTIONS

Texas Academic Skills Program (T.A.S.P.)	Prerequisite Skills for Postsecondary Vocational Programs Vernon Regional Junior College (V.R.J.C.)	Vocational Preparation and Occupations: Educational and Occupational Crosswalk General Educational Development (G.E.D.)	Improvement for Undergraduate Education in Texas: College Level Competencies Fund for the Improvement of Postsecondary Education (F.I.P.S.E.)
A. Fundamental Mathematics			
1. Use number concepts and computation skills. This skill includes adding, subtracting, multiplying, and dividing fractions, decimals, and integers; using the order of operations to solve problems; solving problems involving percents; performing calculations using exponents and scientific notation; estimating solutions to problems; and using the concepts of "less than" and "greater than".	Write whole numbers from written text (six thousand three = 6003). Add and subtract single and multiple digit whole numbers. Read and count single and multiple digit whole numbers. Round off single and multiple digit whole numbers. Read and write common fractions. Multiply and divide common fractions. Reduce fractions to lowest terms. Find common denominator. Change fractions from one denominator to another. Translate a mixed number into an improper fraction and reverse. Carry out arithmetic computations involving dollars and cents. Read and write decimals with one or more places.	*Level 2 Read and write 7-digit numbers. Learn ordinals through "thousands". Count fractions and decimal fractions. Place values of numbers to left and right of decimal point. Add multi-digit columns. Subtract multi-digit columns. Multiply two or three-digit multipliers. Two or three-digit divisors. Add, subtract, multiply, and divide common and decimal fractions, mixed numbers, improper fractions. Introduction to ratio and rate, percent. Change fractions to decimal fractions and to percent. *Level 3 Mastery of the four basic arithmetic operations.	Use mathematics comfortably and spontaneously in many different settings, in a variety of courses. Determine when a problem requires a fixed answer and when estimation is appropriate.

T.A.S.P.	V.R.J.C.	G.E.D.	F.I.P.S.E.
	Round off decimals to one or more places.	Emphasis on speed and accuracy in computation.	
	Multiply and divide decimals with one or more places.	Extension to 4- and 5-digit multipliers and divisors.	
	Add and subtract decimals with one or more places.	Learn use of symbols for numbers, terms such as exponent and power.	
	Convert fraction to decimal equivalent and vice versa.	Learn to find square roots.	
	Convert decimal number to percent and vice versa.		
	Read and write percents.		
	Compute percents.		
	Convert mixed numbers to decimals and decimal fractions to mixed numbers.		
	Compute averages.		
	Perform conversions within metric system (weight, distance, volume).		
	Use a calculator to perform basic arithmetic operations.		
	Use formulas appropriately.		
	Estimate distances in inches, feet, yards, and miles.		
	Convert base ten numbers to other base number systems.		
	Factor.		
	Recognize and name types of angles.		35
34	Recognize and name geometric figures.		

T.A.S.P.	V.R.J.C.	G.E.D.	F.I.S.P.E.
	Solve problems to find length of sides and angles of geometric figures.		
2. Solve word problems involving integers, fractions, or decimals (including percents, ratios, and proportions). This skill includes determining the appropriate operations to solve word problems involving integers, fractions, decimals, percents, ratios, and proportions.	Use arithmetic operations to solve word problems with whole numbers. Perform arithmetic operations using correct hierarchy. Solve word problems with common fractions. Solve word problems with decimals in one or more places. Write digit equivalents of orally stated decimal number. Solve word problems. Solve problems involving ratio and proportions. Solve problems involving time, weight, distance, and volume. Determine if a solution to a mathematical problem is reasonable. Solve basic ratio problems. Reduce ratios to lowest terms. Utilize ratio and proportion to solve word problems. Find sine, cosine, and tangent of an angle using a table and calculator.	*Level 2 Introduction to reasoning and analysis of problems such as finding a part of a number. Finding the whole when a part is given. Learn relationships of standard units of measurement to each other. Convert units of measure to smaller or larger units, such as inches to feet, acres to square miles, hours to days, minutes to seconds, or ounces to pounds. *Level 3 Mastery of the four basic arithmetic operations in common, decimal and improper fractions and mixed numbers. Apply knowledge to solve "story problems". Develop speed and accuracy in changing fractions into percent and percent into fractions. Memorize most common equivalents, such as halves, quarters, eighths, fifths, thirds, sixths, and twelfths, and mentally convert time to decimal fractions and percents.	Examine a problem situation from different perspectives and use corresponding mathematical structures. Evaluate the appropriateness of different methods of problem solution. Be selective in the use of a variety of solution strategies. Employ a variety of strategies in searching for a solution to a problem.

BEST COPY AVAILABLE

Memorize and apply formulas to solve "story problems", as:

$$P=RB \quad R=\frac{P}{B} \quad B=\frac{P}{R}$$

Perform the four basic arithmetic functions to solve problems involving different units of same type of measurement, as:

Time: 4 wks. 6 days 32 hrs.
+2 wks. 3 days 25 hrs.

Apply knowledge of percentage to compute interest, discount, etc.

Learn to use ratio and proportion to solve problems.

*Level 4

Review and extension of principles of common and decimal fractions, percentage, ratio, and proportion.

Practical computation.

Practical algebra.

Metric geometry.

Formulas for computing ratios of pulleys and gears.

Practical physics: Formulas for work and power, etc.

*Level 5

Interest and discount.

T.A.S.P.	V.R.J.C.	G.E.D.	F.I.S.P.E.
3. Interpret information from a graph, table or chart. This skill includes interpreting information in line graphs, bar graphs, pie graphs, pictographs, tables, charts, or graphs of functions.	No close match found.	*Level 3 Learn to construct and interpret line, bar, and picture graphs. Convert degrees to percents to draw circle graphs. *Level 5 In statistics, graphic presentations illustrating average, dispersions, quartiles and percentiles, frequency distribution, reliability, and validity of tests.	Communicate, either orally or in writing, mathematical understanding of the analysis and the solution of a problem, using proper mathematical terminology and syntax. Interpret and analyze the outcome of a problem solving process (i.e., know what the result means, evaluate correctness and accuracy, know how to use the results). Make and defend decisions by organizing and presenting data, by using logical arguments and by using probability.
B. Algebra			
1. Graph numbers or number relationships. This skill includes identifying points from their coordinates, the coordinates of points, or graphs of sets of ordered pairs; identifying the graphs of equations or inequalities, finding the slopes and intercepts of lines; and recognizing direct and inverse variation presented graphically.	Use direct and inverse variation to solve word problems. Construct graphs on coordinate plane.	No close match found.	Generalize over many similar mathematical situations.

T.A.S.P.	V.R.J.C.	G.E.D.	F.I.P.S.E.
2. Solve one- and two variable equations. This skill includes finding the value of the unknown in one-variable equations, expressing one variable in terms of a second variable in two-variable equations, and solving a system of two linear equations in two variables.	Solve linear equations in one variable. Solve linear inequalities (extended). Solve systems of linear equations (extended). Solve systems of inequality (extended). Solve proportion problems with one unknown. Solve systems of linear equations.	*Level 5 Linear equation.	No close match found.
3. Solve word problems involving one and two variables. This skill includes solving word problems that can be translated into one-variable linear equations or systems of two-variable linear equations and identifying the equation or equations that correctly represent the mathematical relationship(s) in word problems.	No close match found.	No close match found.	Discover inconsistencies in problems. Read, write and understand the language of mathematics.
4. Understand operations with algebraic expressions. This skill includes factoring quadratics and polynomials; adding, subtracting, and multiplying polynomial expressions; and performing basic operations on and simplifying rational expressions.	Add, subtract, multiply, and divide algebraic expressions. Add, subtract, multiply, and divide algebraic fractions. Use exponents and square roots appropriately.	*Level 4 Formal study of number systems. Operations on polynomials and rational expressions; solution of equations and inequalities; use of deduction and proof.	No close match found.

T.A.S.P.	V.R.J.C.	G.E.D.	F.I.P.S.E.
		Study of the systems of real numbers; linear, quadratic, rational, exponential, logarithmic, angle, and circular functions; inverse functions; related algebraic functions.	
5. Solve problems involving quadratic equations. This skill includes graphing quadratic equations, solving word problems involving quadratics, identifying the algebraic equivalent of stated relationships, and solving quadratic equations.	Solve quadratic equations by factoring. Construct graphs on coordinate plane.	*Level 5 Exponents. *Level 5 Quadratic equations.	No close match found.
C. Geometry			
1. Solve problems involving geometric figures. This skill includes identifying the appropriate formula for solving geometric problems, solving problems involving two- and three-dimensional geometric figures, and solving problems involving right triangles using the Pythagorean theorem.	Find sine, cosine, and tangent of an angle using a table and calculator. Solve problems to find length of sides and angles of geometric figures.	*Level 5 General introduction to the concepts of algebra, plane geometry. *Level 2 Learning geometric meanings of terms such as radius, diameter, perimeter, circumference, area of rectangle and volume.	No close match found. Reason clearly and present logical arguments using both inductive and deductive methods.
2. Apply reasoning skills. This skill includes drawing conclusions using the principles of similarity, congruence, parallelism, and perpendicularity and using inductive and deductive reasoning.	Recognize and name types of angles. Recognize and name geometric figures. Prepare a truth table. Obtain unions and intersections of given sets.	Construct graphs, charts, and tables. Construct simple geographic forms such as arcs, triangles and perpendiculars.	

T.A.S.P. | V.R.J.C. | G.E.D. | F.I.P.S.E.

*Level 3

Recognize and understand geometric meanings of terms such as horizontal, vertical, perpendicular, oblique and obtuse.

Learn number of degrees in a circle, relationship between angles and degrees, types of triangles: equilateral, isosceles, right and obtuse.

Types of parallelograms: oblong, square, rhomboid, and rhombus.

Learn formulas for finding area of geometric figures.

*Level 5

Development of propositional and predicate calculi, basic semantic concepts and elementary intuitive set theory.

*Level 2: Grade 4-6
*Level 3: Grade 7-8
*Level 4: Grade 9-12
*Level 5: College 1-2

46

47

IIA. WRITING CROSSWALK OF SKILL DESCRIPTIONS

Texas Academic Skills Program (T.A.S.P.)	Prerequisite Skills for Postsecondary Vocational Programs Vernon Regional Junior College (V.R.J.C.)	Vocational Preparation and Occupations: Occupational Crosswalk General Educational Development (G.E.D.)	Improvement for Undergraduate Education in Texas: College Level Competencies Fund for the Improvement of Postsecondary Education (F.I.P.S.E.)
1. Elements of Composition			
a. Recognize purpose and audience. This skill includes recognizing the appropriate purpose, audience, or occasion for a piece of writing; and recognizing writing that is appropriate for various purposes, audiences, or occasions.	Use words appropriate for a specific audience and purpose.	*Level 4 Selection of wordage according to subject matter and audience.	Recognize the need to determine the level of detail to achieve a specific purpose. Recognize when ethical, emotional, or logical appeals are needed to achieve a specific purpose. Determine the information needed for the particular occasion. Determine appropriate purpose and rhetorical genre. Evaluate the process by which the information was collected and decide whether more is needed. Synthesize from unorganized data those ideas appropriate to the writing purpose, audience, and occasion.
b. Recognize unity, focus, and development in writing. This skill includes recognizing unnecessary shifts in point of view or distracting details that impair the development of the main idea in a piece of writing and recognizing revisions that improve the unity and focus of a piece of writing.	No close match found.	*Level 5 Study of the principles of inductive and deductive reasoning such as testing evidence, validity of generalizations, and cause and effect relationships to detect fallacies in arguments and to avoid these errors in own writing. (also in reading IIB, 4)	Recognize when information is readily available from personal experiences, readings, lectures, speeches, or observations. Recognize when necessary information must come from other sources--a library or non-print sources including interviews or experimentation. Recognize when necessary information must be acquired through analysis of literary works or other works of art.

T.A.S.P.	V.R.J.C.	G.E.D.	F.I.P.S.E
			Organize those ideas into a logical and cohesive arrangement consistent with purpose, audience, and occasion. Develop an initial draft in which a controlling idea is supported in a unified and focused manner. Re-evaluate the argument; eliminate any logical fallacies; clarify the distinction between fact and opinion.
c. Recognize effective organization in writing. This skill includes methods of paragraph organization and the appropriate use of transitional words or phrases to convey text structure, and reorganizing sentences to improve cohesion and the effective sequence of ideas. (coherence, logical order, transition)	Organize ideas in essay form. Compose logical and understandable correspondence and reports. Interpret ideas in terms of one's own viewpoint or values. State one's position in a clear, logical manner. Defend one's point of view convincingly. Compile materials supplied by others into a single report. Combine sentences through logical subordination. Compile notes taken from several sources into a documented report. Use words effectively that indicate a transition from one idea to another.	*Level 5 Develop a sequential and descriptive style of writing. Study and application of theory of dramatic writing. Develop a free and independent skill in writing, based on own knowledge and experience. Study of the collection, arrangement, and expression of subject matter to persuade or instill an acceptance of ideas in the mind of the reader. Analysis and practice of expository techniques with emphasis on organization of material and development of unity.	Use techniques such as looping*, listing*, or brainstorming* to generate ideas. Use systems such as rhetorical topics, pentad*, or cubing* to explore knowledge of a subject. Develop an initial draft in which a controlling idea is supported in a unified and focused manner. Provide transitions among various components. Re-evaluate the organization; determine whether the text has been effectively presented and adequately elaborated.

T.A.S.P.	V.R.J.C.	G.E.D.	F.I.P.S.E.
2. Sentence Structure, Usage, and Mechanics			
a. Recognize effective sentences. This skill includes recognizing ineffective repetition and inefficiency in sentence construction; identifying sentence fragments and run-on sentences; identifying standard subject-verb agreement; identifying standard placement of modifiers, parallel structure, and use of negatives in sentence formation; and recognizing imprecise and inappropriate word choice.	Distinguish between complete sentences and fragments. Use verbs that agree with subjects. Construct a logical outline. Use correct idioms. Write clear correct statements to fill out forms accurately. Use words effectively which are opposite of one another. Add proper beginnings and endings to words to change their meanings. Use varied sentence structure. Use appropriately words often confused because of similar sounds. Use citations correctly. Review and edit others' correspondence, directions, and reports.	*Level 2 Learn to use mature sentence forms (compound and complex) with variation of word order in phrases, clauses, and sentences. Introduction to compound subject and predicate; agreement of subject and verb. Write reports on class discussions, hobbies, and trips, with **emphasis on variety of sentence structure, grammar, selection of words to clearly express thought, and reinforcing and increasing vocabulary**. Make outlines; practice techniques of letter writing and news writing. *Level 3 Prepare themes, reports, and essays, with greater emphasis placed on punctuation, spelling, grammar, format, style, neatness, arrangement, and comprehensive coverage of subject matter. Learn normal inverted word order, contractions, agreement of subject and verbs. *Level 4 Mastery and facility in the use of the rules and concepts of person, gender, number, case, tense and mood.	Incorporate language and style appropriate to a given purpose, audience, and occasion. Re-evaluate the style; carry out necessary revisions including attention to matters of cohesion, consistency of point of view, appropriate language, and effective sentence structure.

T.A.S.P.	V.R.J.C.	G.E.D.	F.I.P.S.E.
		Adjectives: Common, proper, descriptive, limiting, articles position in sentence; comparative degrees. Preparation of outlines; preparation of themes, emphasizing length, harmony, sequence, and variety of sentences and paragraph structure. Coordination, subordination and parallelism of thoughts.	
b. Recognize edited American English usage. This skill includes recognizing the standard use of verb forms and pronouns; recognizing the standard formation and use of adverbs, adjectives, comparatives, superlatives, and plural and possessive forms of nouns; and recognizing standard punctuation.	Using plural words correctly. Use of appropriate contractions with apostrophe. Punctuate one's own correspondence. Use apostrophes correctly to show the possessive form of nouns. Use the correct tenses of verbs. Capitalize words correctly. Spell correctly. Use correct abbreviations of words. Distinguish between homonyms. Use appropriate definitions for words with more than one meaning.	*Level 2 Punctuation of the apostrophe, hyphen, and colon. Introduction to comparison of objectives and adverbs; common and proper nouns; personal pronouns, singular and plural forms. *Level 3 Punctuation: Comma, colon, semi-colon, dash, parentheses, quotation marks, hyphen, abbreviations. Learn to diagram sentences. Learn pronouns, and antecedents. Learn concepts of person, gender, number, case, tense, mood, and voice. Learn kinds of verbs, nouns, pronouns, adjectives, adverbs, conjunctions, prepositions. *Level 4 Parts of Speech: Verbs: Strong and weak, transitive and intransitive, auxiliary, regular. Conjugation.	Create and sustain the interest of the reader by effective stylistic decisions in diction, usage, and sentence structure. Proofread for adherence to conventions of edited American English.

Nouns: Common and proper, collective, concrete and abstract inflections, gender.

Pronouns: Personal, demonstrative, relative, numerical, reciprocal.

Adverbs: Simple, conjunctive; forms; comparison.

Conjunctions: Coordinating, subordinating.

Prepositions.

Interjections.

Review and mastery of all rules of punctuation and capitalization.

IIB. READING CROSSWALK OF IDENTIFIED SKILL DESCRIPTIONS

	Texas Academic Skills Program (T.A.S.P.)	Prerequisite Skills for Postsecondary Vocational Programs Vernon Regional Junior College (V.R.J.C.)	Vocational Preparation and Occupations: Occupational Crosswalk General Educational Development (G.E.D.)	Improvement for Undergraduate Education in Texas: College Level Competencies Fund for the Improvement of Postsecondary Education (F.I.P.S.E.)
1.	Determine the meaning of words and phrases. This skill includes using the context of a passage to determine the meaning of words with multiple meanings, unfamiliar and uncommon words and phrases, and figurative expressions.	Find, read and understand information written on a grade level of 8, 10, 12, 14, and above. Read information written on a level of difficulty above grade 14. Read and interpret job-related forms. Read and understand short notes, memos, and letters. Use context and signal words to determine definitions of new words.	*Level 2 In reading learn roots, prefixes, and suffixes. Learn to read discriminately, distinguishing between essential and non-essential material. Enrich vocabulary with wide selection of reading material. Introduction to magazines, newspaper, bulletins, etc.	No close match found.
2.	Understand the main idea and supporting details in written material. This skill includes identifying explicit and implicit main ideas and recognizing ideas and recognizing ideas that support, illustrate, or elaborate the main idea of a passage.	Paraphrase a passage to confirm one's understanding of what was read. Distinguish between the major premise and supporting facts. Explain the main idea in written or oral communication.	*Level 3 Read to find main thought or idea of a paragraph. Locate topic and summary sentence, and identify details and relate them to central thought.	Comprehend key terms and discriminate between main and subordinate ideas either explicitly stated or implied by the text. Recognize how subordinate ideas contribute to the development of a major idea in the overall discussion.

	T.A.S.P.	V.R.J.C.	G.E.D.	F.I.P.S.E.
3.	Identify a writer's purpose, point of view, and intended meaning. This skill includes recognizing a writer's expressed or implied purpose for writing; evaluating the appropriateness of written material for various purposes or audiences; recognizing the likely effect on an audience of a writer's choice of words; and using the content, word choice, and phrasing of a passage to determine a writer's opinion or point of view.	No close match found.	*Level 5 Reading literature, book and play reviews, scientific and technical journals, abstract, financial reports, legal, historical and medical documents, periodicals.	Understand the author's use of literary devices such as simile, metaphor, allusion, imagery, and point of view. Recognize the author's assumptions and biases while withholding final judgment. Recognize the text's audience, purpose, and occasion.
4.	Analyze the relationship among ideas in written material. This skill includes identifying the sequence of events or steps, identifying cause-effect relationships, analyzing relationships between ideas in opposition, identifying solutions to problems, and drawing conclusions inductively and deductively from information stated or implied in a passage.	Evaluate the relevance and strength of support for a conclusion. Recognize patterns of organization of information - cause/effect, etc. Identify the conclusions in written and oral communication.	*Level 5 Study of the principles of inductive and deductive reasoning such as testing evidence, validity of generalizations, and cause and effect relationships to detect fallacies in arguments and to avoid these errors in own writing. (also in writing IIA, 1., b.)	Organize thoughts to guide comprehension by step-by step or spatial sequences, cause-effect relationships, comparisons or contrasts, and problem-solution methods. Recognize either conventional patterns of organization or educe and impose organization on the text when the author does not make the organization clear. Arrive at appropriate conclusions and select supportive evidence from the text.

	T.A.S.P.	V.R.J.C.	G.E.D.	F.I.P.S.E.
5.	Use critical reasoning skills to evaluate written material. This skill includes evaluating the stated or implied assumptions on which the validity of a writer's argument depends; judging the relevance or importance of facts, examples, or graphic data to a writer's argument evaluating the validity of analogies; distinguishing between fact and opinion; and assessing the credibility or objectivity of the writer or source of written material.	Distinguish between fact and opinion. Judge the credibility of a source of information.	No close match found.	Identify logical relationships as well as fallacies in logic. Re-read to check, monitor and evaluate accuracy of original judgments about the text. Determine whether the author of a narrative has succeeded in communicating point of view; in setting an identifiable tone for the selection; in developing a worthwhile plot, characterizations and setting. Determine whether a conclusion or interpretation drawn from the text is reasonable, relevant, and adequately supported by evidence from the text. Determine whether conclusions drawn would appear justified to an informed audience.
6.	Apply study skills to reading assignments. This skill includes organizing and summarizing information for study purposes; following written instructions or directions; and interpreting information presented in charts, graphs, or tables.	Use the telephone directory to make local and long distance calls. Use textbook features, such as index, table of contents, glossaries, etc. Recall information accurately from memory. Carry out correctly written or oral instructions. Use a thesaurus. Read and understand graphs, maps, charts, and tables.	*Level 2 Study of the dictionary to learn syllabication accent and diacritical marks such as macron (-), breve (v), double dot and single dot as an aid to pronunciation. Study of road maps, time tables, and entertainment guides to determine distances between cities, report on transportation schedules and discuss merits of available entertainment. Obtain library card and locate books, using index file. *Level 3 In reference works, utilize dictionary to learn alphabetical order, guide works, diacritical marks, synonyms and antonyms. Use encyclopedia, atlases, magazines, and source books	Understand concepts and generalizations including those presented in visual materials such as maps, charts, graphs, and tables. Understand the use of mathematical notation and definitions, translation of word problems into mathematical formulations and interpretation of graphs of functions. Selectively note or display relationships of ideas (such as an outline or a map) which will serve the purposes set for reading. Summarize key ideas accurately. Draw deductions from information displayed in maps, graphs, and tables.

to prepare class assignments.

*Level 4

Use of reference works such as dictionary, encyclopedia, atlas, thesaurus, manuals, periodicals, newspapers, journals, books, and play reviews.

Reading a variety of textbooks; fiction and non-fiction; newspapers; magazines.

*Level 2: Grade 4-6
*Level 3: Grade 7-8
*Level 4: Grade 9-12
*Level 5: College 1-2

*Information can aid in the development of a curriculum which is reflective of occupational requirements in terms of levels of reasoning, mathematics and language needed for successful performance on the job.

Project Administrator:	Dr. Jack Foreman, Northeast Texas Community College, Mt. Pleasant, Texas.
Project Director:	Dr. Eugenia Travis, Northeast Texas Community College, Mt. Pleasant, Texas.
Project Consultant:	Dr. Bill Lovelace, North Texas State University, Denton, Texas.
Project Researcher:	Dr. Wil Watson, Northeast Texas Community College, Mt. Pleasant, Texas.
Correlated and Verified by:	Mrs. Glenda Ballard, Language Arts, Northeast Texas Community College, Mt. Pleasant, Texas. Dr. Doug Richey, Mathematics, Northeast Texas Community College, Mt. Pleasant, Texas.

REFERENCES:

Hinds, Joyce, Prerequisite Skills for Postsecondary Vocational Programs, Vernon Regional Junior College, Vernon, Texas, June 1989.

Improvement for Undergraduate Education in Texas: College Level Competencies. Fund for the Improvement of Postsecondary Education (FIPSE), Texas Higher Education Coordinating Board, Austin, June 1989.

Texas Academic Skills Program (TASP), National Evaluation System, Inc. In cooperation with Texas Higher Education Coordinating Board and Texas Education Agency, Amherst, 1989.

Vocational Preparation and Occupations: Educational and Occupational Code Crosswalk, (G.E.D.) Third Edition, Volume 1, National Occupational Information Coordinating Committee, December 1982.

PREREQUISITE SKILLS COMMON TO 71 POSTSECONDARY VOCATIONAL PROGRAMS

Development of Document

Vernon Regional Junior College staff conducted a study in 1989 in which respondents of 71 different vocational programs were asked to complete a basic skills questionnaire. Respondents rated 125 skill statements as to being required at entry level (R), unnecessary (U), or no consensus (NC). Those skills which were required are shown in the **handout TI-13**. "Prerequisite Skills Common To 71 Postsecondary Vocational Programs". The exception of the questions listed are shown by an asterisk at the end of the skill statement. The key to the asterisks appears on page two of the document. The form is divided into two main sections of "Mathematics" and "Communication Skills." Represented on page two are the programs which show exceptions to the common core requirements. For additional skills in specific vocational programs please see the attached "Prerequisite Skills in Addition to Common Core Skills."

Use of Document

These skills lists were developed to assist participants in placement of basic skills into their vocational curricula. The Texas Academic Skills Program skill statements are more general than those used in the Vernon Regional Junior College Study; therefore, the more explicit skill statements were used throughout the project. This document can be shared with the public school program directors.

PREREQUISITE SKILLS COMMON TO 71 POSTSECONDARY VOC. PROGRAMS**

MATHEMATICS

A. Whole Numbers

1. Write whole numbers from written text (six thousand three = 6003)
2. Add and subtract single and multiple digit whole numbers
3. Multiply and divide single and multiple digit whole numbers
4. Use arithmetic operations to solve word problems with whole numbers*
5. Read and count single and multiple digit whole numbers
6. Round off single and multiple digit whole numbers*
7. Perform arithmetic operations using correct hierarchy*

B. Fractions

1. Read and write common fractions
2. Add and subtract common fractions*

C. Decimals

1. Read and write decimals with one or more places*
2. Multiply and divide decimals with one or more places*
3. Add and subtract decimals with one or more places*
4. Read and write percents*
5. Compute percents*

II COMMUNICATION SKILLS

A. Written Expressions

1. Use plural words correctly*
2. Use correct abbreviations of words*
3. Use appropriately words having similar sound*
4. Punctuate one's own correspondence*
5. Capitalize words correctly*
6. Write clear, correct statements to fill out forms accurately*
7. Spell correctly*
8. Use verbs that agree with subjects*
9. Use the correct tenses of verbs*

B. Reading/Verbal Reasoning

1. Find, read and understand information written for grades 8, 10, and 12*
2. Paraphrase a passage to confirm one's understanding of what was read*
3. Read and understand short notes, memos and letters*
4. Use a dictionary to find meaning, pronunciation and spelling of words*
5. Use the telephone directory to make local and long distance calls*
6. Use textbook features, such as index, table of contents, glossaries,etc*
7. Distinguish between facts and opinions*
8. Recall information accurately from memory*
9. Carry out correctly written or oral instructions*

Exceptions

*1 Court Reporting C.I.P. 07.0602 see IA.#4,7;IB#2;IC#2,3,5;IIB#2,7
*2 Fashion Design C.I.P. 19.0902 see IA.#4
*3 Maintenance Eng. C.I.P. 15.0499 see IA.#6,7;IB#2;IC#4,5;IIA#1-9;IIB.#1-9
*4 Cosmetology C.I.P. 12.0403 see IA.#7;IC#2,3,5
*5 Upholstery C.I.P. 48.03 see IC.#1,2,3;IIA.#1-6,8,9
*6 Diesel Mechanics C.I.P. 47.0605 see IIA.#2
*7 Construction Trades C.I.P. 46 see IIA.#3
*8 Interior Decorating C.I.P. 20.05 see IIB.#2,7
*9 Petroleum Technology C.I.P. 15.0903 see IIB.#5

REFERENCES:

**Hinds, Joyce, Prerequisite Skills for Postsecondary Vocational Programs, Vernon Regional Junior College, Vernon, Texas, June 1989.

Improvement for Undergraduate Education in Texas: College Level Competencies. Fund for the Improvement of Postsecondary Education (FIPSE), Texas Higher Education Coordinating Board, Austin, June 1989.

Texas Academic Skills Program (TASP), National Evaluation System, Inc. In cooperation with Texas Higher Education Coordinating Board and Texas Education Agency, Amherst, 1989.

Vocational Preparation and Occupations: Educational and Occupational Code Crosswalk, (G.E.D.) Third Edition, Volume 1, National Occupational Information Coordinating Committee, December 1982.

PREREQUISITE SKILLS IN ADDITION TO COMMON CORE SKILLS

Development of Form

The skills listed in "Prerequisite Skills in Addition to the Common Skills" are shown in **handout TI-14**. Staff members recognized that the skills shown in the Vernon Regional Junior College study would be helpful to vocational and academic instructors in planning their course of study. The required skills are identified first by the program such as "Automotive Mechanics CIP # 47.0604. The CIP number was taken from A Classification of Instructional Programs document by the U.S. Department of Education, National Center for Educational Statistics, U.S. Government Printing Office, Washington, D.C., 1981. Shown just below the CIP number is the educational level required for that program. The Vocational Preparation and Occupations (VPO) by the National Occupational Information Coordinating Committee was used to identify the levels of general educational development. This manual identified the "math" (M) level; "language" (L) level; and the physical demands, and working conditions or "special vocational preparation" (SVP) levels for vocational programs. The math, language, and special vocational preparation levels were taken from the original document Relating General Educational Development to Career Planning by the U.S. Department of Labor. The literature related that there are no plans to revise this original manual. The educational levels used in "Prerequisite Skills in Addition to Common Core Skills" are as follows:

1. Level 1 - Grades 1-3
2. Level 2 - Grades 4-6
3. Level 3 - Grades 7-8
4. Level 4 - Grades 9-12
5. Level 5 - College 1-2
6. Level 6 - College 3-4

Handout TI-14 is divided by mathematics and communication skills sections. The sub units under the mathematics section include fractions; decimals; mixed operations; measurement and calculation; estimation; and ratio and proportion. The sub units under the communication skills section include written expression and reading/verbal reasoning.

Use of Form

The use of the "Prerequisite Skills in Addition To Common Core Skills" should aid in curriculum development which is reflective of occupational skills of mathematics and language needed for successful performance on the job. This document, the "Common Core Skills" document, and the other studies reflected in the "Crosswalk" should be important in the integration of basic skills to statewide vocational education programs. This document can be shared with the public school program directors.

Prerequisite Skills in Addition to Common Core Skills

Please contact your presenter or a project staff member for a copy(s) of skills needed in 71 separate vocational programs. The following program titles are available:

Accounting
Agricultural Business
Air/Conditioning/Heating
Airplane Piloting and Navigation
Alteration and Tailoring
Automotive Body Repair
Automotive Mechanics
Aviation Maintenance
Banking & Finance
Business Management
Chemical Technology
Child Development
Civil & Highway Technology
Commercial Art
Commercial Photography
Computer Science
Construction Trades
Cosmetology
Court Reporting
Criminal Justice
Culinary Arts
Data Processing
Dental Assisting
Dental Hygiene
Diesel Mechanics
Drafting and Design
Electro - Mechanical Technology
Electronics
Emergency Medical Service
Engineering Technology
Farm/Ranch Management
Fashion Design
Fashion Merchandising
Fire Technology
Graphic Arts
Horse Management
Horticulture
Hotel/Motel Management
Instrumentation Technology
Interior Decorating
Interior Design
Interpreter Training
Maintenance Engineering
Marketing
Medical Assisting Technology
Medical Laboratory Technology
Medical Records Transcription
Mental Health Technology
Microcomputer Repair
Microcomputer Technology
Nurse Aide
Nursing Home Administration
Nursing (RN)
Office Technology
Paralegal
Petroleum Technology
Physical Therapy Assisting
Postal Service Technology
Quality Control Technology
Radio/TV Production
Radiology (Medical) Technology
Real Estate
Respiratory Therapy
Restaurant Management
Robotics
Small Engine Repair
Surgical Technology
Upholstery
Vocational Nursing
Welding
Word Processing

WORKSHEET FOR IDENTIFYING BASIC SKILLS

Name of occupational program or courses: _____ Team members:

_____

_____

Name of course: _____ _____

Occupational Task	Theory or Related Information	Communication Skills	Mathematical Skills
1.		1.	1.
		2.	2.
		3.	3.
2.		4.	4.

Please code the basic skill with the number representing the phrasing of the basic skill. (1) TASP, (2) The Vernon Study or (3) GED.

WORKSHEET FOR IDENTIFYING BASIC SKILLS

Name of occupational program or courses: _____ Team members:

_____

_____

Name of course: _____ _____

Occupational Task	Theory or Related Information	Communication Skills	Mathematical Skills
1.		1.	1.
		2.	2.
		3.	3.
2.		4.	4.

Please code the basic skill with the number representing the phrasing of the basic skill. (1) TASP, (2) The Vernon Study or (3) GED.

WORKSHEET FOR IDENTIFYING BASIC SKILLS

Name of occupational program or courses: _____ Team members:

_____

_____

Name of course: _____ _____

Occupational Task	Theory or Related Information	Communication Skills	Mathematical Skills
1.		1.	1.
		2.	2.
		3.	3.
2.		4.	4.

Please code the basic skill with the number representing the phrasing of the basic skill. (1) TASP, (2) The Vernon Study or (3) GED.

TASK II

Task II Objective

Participant teams will identify the relationship and application of basic skills to occupational tasks. Task II will be performed using (1) the instructions provided by the workshop presenter; (2) lesson plans and/or course outlines of the occupational team member; and (3) the worksheet provided by the workshop staff.

A minimum of two applications to academic and vocational teaching should be listed for each task. Thirty minutes will be allowed for the completion of this task.

Combining Academic and Vocational Teachers to Incorporate Academic Competencies in Vocational Courses

1. Academic teacher presents modules in vocational classroom

2. Academic teacher assists vocational instructors in developing basic skill or academic exercises

3. Academic teacher pulls individual students out of vocational classes for intensive teaching on academic related material or remediation

4. Academic teacher presents one class of applied math or communications

Team members:

_____

_____

_____

Application of Academic and Vocational Skills by the Vocational Teacher to Show the Relationship of Both in the Completion of the Task (walk through examples)

Course Title: Electronics

Task	Application of Academic Skills	Application to Vocational Teaching
1. Using wiring diagrams, the student will determine wire and fuse sizes with 90% accuracy	1. (Reading) Read and understand lab sheet concerning competency and tasks. 2. (Math) Write multiple and sub multiple units from base numbers.	1. (Reading) Estimate ampacities for sizing wire and fuses from a wiring diagram. 2. (Math) Correctly relate to the circuit value a symbol on a wiring diagram representing a sub multiple unit of an electrical value.
2. Using meters (V.O.A.) and testers, the student will record the appropriate readings with 100% accuracy.	1. (Reading) Interpret, process, and perform intricate orderly functions of a work order. 2. (Math) Using Ohm's Law, transpose formulas in order to solve for basic circuit values.	1. (Reading) Correctly meter various electrical components for functional and operational accuracy using assigned job sheets. 2. (Math) Using Ohm's Law, calculate the expected value of a meter reading (current, voltage, resistance).

Team members:

_____

_____

_____

Application of Academic and Vocational Skills by the Vocational Teacher to Show the Relationship of Both in the Completion of the Task

Course Title:

Task	Application of Academic Skills	Application to Vocational Teaching
1.	1.	1.
	2.	2.
2.	1.	1.
	2.	2.

Team members:

_____

_____

_____

Application of Academic and Vocational Skills by the Vocational Teacher to Show the Relationship of Both in the Completion of the Task

Course Title:

Task	Application of Academic Skills	Application to Vocational Teaching
1.	1.	1.
	2.	2.
2.	1.	1.
	2.	2.

Team members:

_____

_____

_____

Application of Academic and Vocational Skills by the Vocational Teacher to Show the Relationship of Both in the Completion of the Task

Course Title:

Task	Application of Academic Skills	Application to Vocational Teaching
1.	1.	1.
	2.	2.
2.	1.	1.
	2.	2.

Occupation to Lesson Matrices (example)

LICENSED PRACTICAL NURSE Occupation Code: L01

01A: Match Numbers with Word Names and Models
01B: Write Numbers in Sequence
01C: Order Numbers in a Specific Sequence
01D: Identify the Greatest or Least Number from a Set of Numbers
01E: Identify an Object with a Specified Ordinal Position
01F: Write or State the Place Value of a Particular Digit in a Whole or Decimal Number
01G: Rounding Numbers
01H: Count Forward or Backward by a Given Number and Determine the Next Number in a Series
01I: Match Positive and Negative Numbers or Points with Tick Marks on a Number Line

02A: Interpret the Markings on Linear Scales
02B: Identify Units of Measure and Classify According to Type of Measure
02C: Measure Lengths and Distances Using Rules, Yardsticks, or Metersticks
02D: Identify Measures of Weight, Pressure, and Torque
02E: Identify Measures of Volume and Capacity
02G: Estimate Lengths and Distances

03A: Identify Degrees and Mils as Units in Determining Angular Measurement or Temperature
03B: Estimate the Measure of an Angle not Greater than 180 Degrees

04A: Interpret 24 Hour Time
04B: Use the Position of the Clock to Indicate Direction
04C: Estimate Time in Seconds and Minutes
04E: Express Time Using Decimals

05A: Read and Interpret Gauges
05B: Use Gauges with Digital Readouts
05C: Read a Color Band Gauge
05D: Read and Interpret Scales with Positive and Negative Markings
05E: Read and Interpret Multi-Scale Gauges
05F: match a Gauge Reading to a Specification
05G: Read and Interpret Unnumbered Gauges
05H: Read a Moving Gauge
05I: Adjust Gauges to Meet Specifications

06A: Identify Directions that Tools, Hardware, or Components May be Moved
06B: Align Parts and Equipment
06C: Interpret Spatial Relations

07A: Identify Points, Lines, Line Segments, and Rays
07B: Identify Parallel, Intersecting, and Other Lines
07C: Identify Perpendicular and Intersecting Lines
07D: Superimpose Lines

08A: Identify Geometric Shapes
08B: Identify Characteristics of Plane Shapes
08C: Use Descriptions to Identify Objects
08D: Match Figures of Both Actual Size and Model Drawings
08E: Identify Objects Based on Position

09A: Identify Angles
09B: Identify Types of Angles

10A: Recognize Solid Shapes and Match Solid Figure Shapes to Their Names

11B: Identify Spatial Orientation Terms with Positions

12A: Add and Subtract Whole Numbers without Carrying or Borrowing
12B: Add and Subtract Whole Numbers with Carrying or Borrowing
12C: Add and Subtract Decimals
12F: Increase and Decrease Values on Measuring Instruments
12G: Add and Subtract Measurements
12H: Estimate a Sum or Difference

13A: Multiply and Divide Whole Numbers
13B: Multiply and Divide Decimal Numbers
13C: Divide Numbers with Decimals
13E: Estimate a Product or Quotient

14A: Estimate Fractional Length, Area, Volume, and Distance
14B: Reduce Fractions to Lowest Terms
14C: use a Conversion Table to Convert Decimals and Fractions
14D: Convert Decimals, Percents, and Fractions
14E: Add and Subtract Fractions
14F: Multiply and Divide Fractions
14G: Estimate Fractional Parts Using Common Fractions

15G: Compute the Area and Circumference of a Circle
15I: Use Formulas to Solve Problems Involving Geometric Figures

16B: Compute Averages
16D: Solve Problems Using Units of Measurement
16E: Get Information from Number Lines, Graphs, Tables, and Scales
16F: Solve Conversion Problems
16G: Solve Problems Involving Ratio and Proportion
16H: Use Word Problems

18A: Solve Simple Algebraic Equations
18B: Derive Equivalent Algebraic Equations
18C: Calculate with a Pocket Calculator

25A: Follow Directions to Complete a Task Activity
25B: Select Text and Visual Materials
25C: Follow Directions
25E: Situational Decision Making

26A: Recognize Meanings of Common Task-Related Words
26C: Identify the Meaning of a Word from Context
26F: Recognize Radio and Navigation Terms

27C: Locate Information from a Table of Contents, Index, Appendix, and Glossary
27D: Find the Title Page, Paragraph, Figure, or Chart to Answer Questions and Solve Problems
27E: Skim or Scan for Relevant Information
27F: Locate Information to Perform a Task Using Cross Reference
27G: Organize Information from Multiple Sources

28A: Find Information in Two-Column Tables
28B: Find Information in Tables with Columns and Rows

28C: Find Information in Complex Tables
28D: Use Troubleshooting Tables

29A: Read Illustrations
29B: Use a Key, Legend, or Parts List
29C: Read and Use Sections Illustrations
29E: Use ad Sequence of Illustrations to Follow a Procedure
29F: Integrate Visual Information to Select a Course of Action

30A: Identify the Meaning of Symbols on a Flow Chart
30B: Use Flow Charts to Make Decisions
30C: Use an Organization Chart to Identify Members of an Organization

32A: Find Parts on a Form
32B: Fill in Numbers on a Form
32C: Fill in Information on a Form
32D: Write Descriptive Information on a Form
32E: Locate and Compare Facts on a Form

33A: Record Essential Information
33B: Record Mental and Written Notes
33C: Record Information Using Sentences
33D: Record Information in More Advanced Situations

34A: Identify Major and Subordinate Topics
34B: Write Titles Using Main Ideas
34C: Select Appropriate Details for Main Ideas
34D: Label the Parts of an Outline

35A: Report Writing - Assemble Information
35B: Report Writing - Summarize Details for a Report
35C: Report Writing - Select Relevant Details for a Written Report
35D: Report Writing - Sequence Events in Logical Order
35E: Report Writing - State Facts and General Impressions
35G: Report Writing - Summarize Events

35H: Report Writing - Summarize the Major Points
35I: Report Writing - Write a Report that Justifies Actions Taken

36A: Spell Frequently Used Words Correctly
36C: Identify Words that Need to be Capitalized
36D: Use a Reference Source to Correct Misspellings
36E: Apply Punctuation Rules
36F: Apply Common Rules of Grammar
36G: Rewriting Paragraphs
36H: Appraise a Written Communication and Make Adjustments to Improve Clarity

41A: Identify Similarities and Differences Between and Among Objects
41C: Identify Defects or Damage to Equipment
41D: Move, Align, and Connect Objects
41E: Identify Objects by Their Characteristics
41G: Use Your Senses to Determine a Course of Action
41H: Use Codes to Perform a Task

Reference:

Using the Job Skills Education Program to Prepare Adults for Vocational or Job Specific Training Programs: Job Skills Education Program, Center for Educational Technology, Florida State University, April 30, 1990.

TASK III

Task III Objective

Participant teams will develop instructional materials to be used by an instructor of basic skills that will assist students in understanding the relationship and application of basic skills to occupational tasks. Task III will be performed using (1) the instructions provided by the workshop presenter; (2) lesson plans and/or course outlines of the occupational team member; and (3) the worksheet provided by the workshop staff. A minimum of two activities should be completed for this task. Thirty minutes will be allowed for the completion of this task.

PRE-TEST

Analysis of priorities of previously identified knowledge

Teacher made pre-tests are very important in determining competencies of students enrolled in vocational programs. Once competencies are established the development of academic/ vocational skill pre-tests may be constructed to assess the competency level of students. Two approaches to testing are as follows:

1. Normative Referenced Tests compare one student's performance with the performance of other students.

2. Criterion Referenced Tests are determined by task analysis and employer specifications.

Pre-tests are instruments used to determine a student's mastery of skills associated with a performance or learning objective. In this case the pre-test will be used to determine the basic academic skill levels of students entering vocational programs. The pre-test is not used for a grade to show mastery as is the post-test. Pre-tests and post-tests may be used to chart or show the progress of a student from the beginning to the end of a vocational program. Pre-tests may be administered at various stages of learning in order to ascertain level of competency of a certain subject matter.

Two test administration methods in vocational education are as follows:

1. Written tests are considered important in ascertaining knowledge of elements or facts. Written tests focus on rules, definition of terms, and facts. Written tests are easier to develop and manage than performance tests.

2. Performance tests should be developed when evaluation of task performance is necessary.

Suggestions

When developing pre-tests the following should be taken into consideration:

1. A task analysis should be completed to determine the competencies of the program as pertaining to the academic and vocational skills needed by the students.

2. Once learning objectives have been defined, the test may be developed.

3. Make sure the test matches the task.

4. Do not over use written test items.

5. Determine whether a written or performance test is necessary.

6. In Competency-Based Instruction a criterion referenced test should be used.

7. The assessment results should give direct information about pupils' achievements in relation to objectives.

8. The results should provide a basis for decisions concerning future learning needs. Tests should be formative in nature.

9. Consider test item banking and automated tests in order to reduce paper work.

Examples of an integrated academic/vocational basic skills pre-test using prerequisite **"common core skills"** competency statements

MATHEMATICS

Whole numbers

1. Write whole numbers from written text.

   six thousand three = _____

2. Add and subtract single and multiple digit whole numbers.

8 ft. 8 in.	12 ft. 4 in.	5 yd. 3 ft.
+4 ft. 10 in.	- 3 ft. 9 in.	-2 yd. 2 ft.

3. Multiply and divide single and multiple digit whole numbers.

   5x2= ____ 4/2= ____ 15872x1086= ____

   204576/1022= ____ 2015367/224= ____

   One man can put on 43 square feet of roof shingles per hour. How many square feet can be put on during an 8 hour day by 6 men working at the same rate?

4. Use arithmetic operations to solve word problems.

   A contractor bought 14,500 board feet of 1" native pine, 1,250 board feet of 2" spruce, and 1,450 board feet of 3" hemlock. How many feet of lumber did he buy in all?

5. Read and count single and multiple digit whole numbers.

   One thousand three hundred forty-two as a numeral is

   (a) 10,342 (b) 1,342 (c) 100,342
   (d) 1,2000,42 (e) none of the above

6. Round off single and multiple digit whole numbers.

   5362 rounded to the nearest hundred equals

   (a) 5300 (b) 5360 (c) 5400

   (d) 5370 (e) none of the above

7. Perform arithmetic operations using correct hierarchy.

   8 X 25.065 (167 + 246) - 1624 / 76 (2667 - 1422) =

Fractions

1. Read and write common fractions.

   Circle the letter of the correct answer.

   5/8 = (a) 0.431 (b) 0.625 (c) 0.75

   (d) 0.605 (e) none of the above

2. Add and subtract common fractions.

   5/8 + 3 3/4 + 2 5/6 =

   (a) 5 13/18 (b) 5 5/24 (c) 6 5/24

   (d) 5 7/8 (e) none of the above

Decimals

1. Read and write decimals with one or more places.

   .01 =_____
   .20 =_____
   .0004 =_____

2. Multiply and divide decimals with one or more places.

   29.95 x .12 = 5925.25 x .03 =

3. Add and subtract decimals with one or more places.

001.535	55.828	10.188	102.100
+153.010	+01.190	-00.029	-001.524

4. Read and write percents.

   (a) six percent = (b) 906% =
   (c) seven percent = (d) 79% =

5. Compute percents.

   (a) $29.95 x 6% = _____
   (b) $5925.25 x 3% = _____

COMMUNICATION SKILLS

Written Expressions

1. Use plural words correctly.

   goose = _____ tree = _____ bush = _____

2. Use correct abbreviation of words.

   American Institute of Architects =
   Aluminum = _____ Avenue = _____
   Bedroom = _____ Gallon = _____

3. Use appropriately, words that are often confused because of similar sounds.

   We need to order five more boxes of (stationary, stationery).

   He plans to (accept, except) a new position at the end of the year.

   (They're, Their, There) office equipment is obsolete.

4. Punctuate one's own correspondence.

   Circle the sentences in which all the commas are used correctly.

   Will you please sign, and return the enclosed forms by June 1.

She proofread the manuscript, but could find no errors.

Naturally, we guarantee the quality of all our products.

You are to be congratulated on a job well done a job extremely well done.

5. Capitalize words correctly.

Circle the sentences in which capital letters and punctuation have been used correctly.

We hope that president Jones will be able to attend the reception.

The Japanese beetle is not very troublesome in its native country (Japan); however, in America it is a most destructive insect.

6. Write clear, correct statements to fill out forms accurately.

Circle the letter of the sentence that is correctly written.

(a) Because management is seeking decentralization, this is an opportunity to innovate and show your ability.

(b) The job completed after two years of construction and the expenditure of $7 million.

(c) If the project comes in on time with no cost overruns.

(d) When the shipment arrived, it was damaged.

7. Spell correctly.

Circle the words which are not spelled correctly.

canceled	congradulated	oficiate
personal	oficial	upholstory
personnel	accurately	mortgager

8. Use verbs that agree with subjects.

Circle the verb that agrees with the subject of the sentence.

Among those papers (is, are) the missing report.

The supervisor and the office manager (take, takes) every precaution when obtaining needed office equipment.

Every one of the customers (has, have) been notified of the bank's new location.

9. Use the correct tenses of verbs.

Fill in the correct tense of the verb in parentheses.

The welder _____(clean) the metal before and after welding.

By mistake, the customer_____ (throw) away his copy of the estimate.

The welding electrodes and work leads _____ (wear) out due to excessive use.

Reading/Verbal Reasoning

1. Find, read and understand information written on the 8th, 10th, and 12th grade level.

Read the following passage and answer question 5.

> During the past few years business has made rapid strides in applying to the field of office management the same fundamental principles of procedure and method that have been in successful use for years in production work. Present-day competition, resulting in smaller margins of profit, has made it essential to give careful attention to the efficient organization and management of internal administrative affairs so that individual productivity may be increased and unit costs reduced.

5. According to the above paragraph

(a) Office management always lags behind production work.

(b) Present day competition has increased individual productivity.

(c) Efficient office management seeks to reduce gross costs.

(d) The margin of profits widens as individual productivity is increased.

(e) Similar principles have met with equal success in the fields of office management and production work.

2. Paraphrase a passage to confirm one's understanding of what was read.

Read the following passage and in the space below, write a title and a brief summary of the major ideas of the passage.

No-clip coupons, reverse vending machines, and paperless shelf labels are among the technological wonders coming soon to your grocery store. The vending machine will gobble up recyclable plastic containers and give you a receipt to be redeemed at the checkout counter. With the new no-clip system, you set up an account to which the store deposits coupons electronically each month; money is deducted automatically when you check out. Electronic shelf labels let stores change prices quickly and guarantee that the listed price matches the price in the checkout scanner.

Although technology is the big news, supermarkets are also introducing things small and simple: kid-size shopping carts, for example.

3. Read and understand short notes, memos and letters.

Read the following short note and answer the question.

When new bearings are to be installed, make sure your hands, the workbench, tools, and all engine parts are clean. Keep the new bearings wrapped up until you are ready to install them. Then handle them carefully. Wipe each with a fresh piece of cleaning tissue just before installing the bearings.

(1) The first step in installing new bearings is

(a) Wrap the new bearings

(b) Clean hands and work area

(c) Wipe the new bearings

(d) Put bearing shells in place

4. Use a dictionary to find meaning, pronunciation, and spelling of words.
Consult a dictionary and write the meaning and pronunciation symbols of the following words:

Pitch-

Slope-

Rise-

Area-

Board foot-

5. Use the telephone directory to make local and long distance calls.

Refer to the following phone book strip and answer the following question.

Hamel Robt M 16 Highbridge Dr.....333-2125
Hamel Robt J 103 Bingham Rd.....737-1430
Hamel Robt S 18 Jenkins Prov.....245-1021
Hamel Ronald C. 21 Quail Dr.....781-3811
Hamel S.A. 21 Dogwood Cir.....245-1560

What is the telephone number of Robert Hamel who lives on Bingham Rd.?

(a) 333-2125
(b) 737-1340
(c) 737-1403
(d) 245-1560
(e) none of these

6. Use textbook features, such as index, table of contents, glossaries, etc.

Refer to the following Table of Contents to answer question 1. below.

Table of Contents Chapter

PART THREE SHIELDED METAL ARC WELDING
9 Shielded Metal Arc Welding Equipment and supplies..... 10
10 Shielded Metal Arc Welding (AC & DC).. 35

PART FOUR GAS TUNGSTEN AND GAS METAL ARC WELDING
11 GTAW and GMAW Equipment and Supplies.. 45
12 GTAW..... 60
12 GMAW..... 65

1. In what chapter would you find

information about the types of welding rods required for GTAW?

(a) 35 (b) 60
(c) 65 (d) 45

7. Distinguish between facts and opinions.

Place a check by the following statement which shows fact compared to opinion.

The mechanic installed a fuel pump that was defective.

With the installation of a defective fuel pump the mechanic could not guarantee the serviceability of the automobile.

8. Recall information accurately from memory.

Read the following statement and perform the procedure.

Raise the hood of the car, check the tightness of the starter with the wrench, tighten starter if needed, and try the key to verify if starter functions.

9. Carry out correctly written or oral instructions.

Read the following recipe and prepare the dish.

1 cup sugar
1 cup flour
1 egg
1 tablespoon baking powder

Cook 35 minutes in an oven at 350 degrees and serve in heat resistant plates.

POST-TEST

Analysis of priorities of previously identified knowledge

Grant Wiggins (1988) asked the question, "What is a true test?" He proposed a radical answer, in the sense of a return to the roots. According to Wiggins tests grew out of the "school-efficiency" movement in the years between 1911 and 1916.

The root of the word assessment reminds us that an assessor should sit with a learner in some sense to be sure that the student's answer means what it seems to mean. For a test to be authentic the student's response to the assessment should be requested.

Wiggins (1988) felt that we had lost sight of the fact that a true test of intellectual ability requires the performance of exemplary tasks. Authentic tests should duplicate the challenges and standards of performance that face writers, business people, scientists, community leaders, designers, or historians. Wiggins feels that tests should include writing essays and reports, conducting individual and group research, designing proposals and mock-ups, assembling portfolios, and so on. Research shows that legitimate assessments are responsive to individual students and to school contexts. Evaluation is most successful when it takes into consideration the human judgment and dialogue. The student must be able to ask for clarification and explain the answers. A test allows the instructor to view the achievement of the student concerning essentials as well as challenges to standards.

The test is central to instruction. A test should give a reflection on all materials being taught. In order for a test to be appropriate to the success of students in programs, the test should not be considered only in terms of accountability.

College transcripts tell the employer nothing about what a student can actually do. The employer, according to Carnes (1990), through viewing actual performance of graduates of vocational programs during the first term of employment can actually determine the degree of acquired knowledge. Research shows that tests not only monitor standards, but should set them. Students want to know if certain items of learning will be on a test. This is natural and instructors should satisfy this natural question with a positive reply. There is no harm in an instructor "teaching to the test" if the test offers the student a genuine challenge. If a test is thought of in terms of accountability the real reason for testing is missed.

As George Strayer (1989), head of the National Education Association (NEA) Committee on Tests and Standards for School Efficiency, reported, "We may not hope to achieve progress except

as such measuring sticks are available." Peter Elbow (1986) pointed out that in all performance-based education, the teacher goes from being the student's adversary to being the student's ally. Several questions, according to the literature, must be asked concerning testing:

1. What kinds of challenges would be of most educational value to students?

2. What kinds of challenges would give teachers useful information about the abilities of their students?

3. How will the results of a test help students know their strengths and weaknesses on essential tasks?

4. How can a program adequately communicate its standards to interested outsiders and justify them?

The literature shows that tests should be central experiences in learning. The problems of administration and scoring should be approached after an authentic test has been developed. Mastery is more than producing verbal answers on cue, it involves thoughtful understanding as well. According to Grant Wiggins (1987) an authentic test enables the instructor to watch a learner pose, tackle, and solve slightly ambiguous problems. It allows us to watch a student marshal evidence, arrange arguments, and take purposeful action to address the problems.

In performance-based instruction the mastery of a competence is not made on one performance. The patterns of success and failure are observed numerously. Educators typically learn too much about a student's short-term recall and too little about a student's habits of mind. Gilbert Ryle (1949) in Concept of Mind, explained that habit involves thoughtful control over ideas and that a single performance is inadequate. There is a need to observe a students' acquired knowledge and not rote catechisms coughed up in response to pat questions.

Walter Haney (1985) expressed that a test should not be hidden from a student. The test should be repeatedly taken as a musical instrument is practiced and a musical piece is played.

Robert Glaser (1988) reported that designing authentic tests should involve knowledge that is forward-looking. All tests should be viewed as "assessments of enablement." All tests should involve students in the actual challenges, standards, and habits needed for success in the academic disciplines and in the workplace. A test should duplicate as near as possible the challenges facing a person in the field.

In 1980 the London Department of Education and Science offered the following from an assessor's manual for a mathematics test for British 15-year-olds covering the ideas of perimeter:

1. What is the perimeter of a rectangle? (Write student answer.)

2. Present sheet with rectangle. Ask: Could you show me the perimeter of this rectangle? (If necessary, teach).

3. Ask: How would you measure the perimeter of the rectangle? (If necessary, prompt for full procedure. If necessary, teach...).

The scoring system works as follows:

1. Unaided success.

2. Success following one prompt from the tester.

3. Success following a series of prompts.

4. Teaching by the tester, prompts unsuccessful.

5. An unsuccessful response, and tester did not prompt or teach.

6. An unsuccessful response despite prompting and teaching.

7. Question not given.

8. Unaided success where student corrected an unsuccessful attempt without help.

The successful responses were combined into two larger categories called unaided success and aided success, with percentages given for each.

Suggestions

Robert Glaser and others (1988) suggested the criteria of authenticity of tests as follows:

1. Structure and logistics.

2. Intellectual design.

3. Standards of grading and scoring.

Examples of an integrated academic/vocational basic skills post-test using prerequisite **"common core skills"**competency statements

See **Pre-test** for examples.

INSTRUCTIONAL ACTIVITIES

Analysis of priorities of previously identified knowledge

The Texas System for Developing A Competency-Based Curriculum (TEXCOM 1990) illustrates instructional activities. The manual suggests that the overall efficiency of the activities depends upon the experiences selected by the developer. The quality of the learning guide determines whether students master the knowledge and skills easily or with difficulty. The activities should allow the student to progress through the program with ease while learning the maximum. Carnes, TEXCOM (1990), explains that a learning activity plan should have the learning objective described. The learning objective is a description of the procedure the student will follow to complete the plan. The procedures have two parts as follows:

1. The information describing the learning assignments should be in desired sequence.

2. A description of the resources and instructions required to complete each assignment should be given.

Suggestions

The learning activities should reflect all the competencies the student should experience in program development. The activities should include tests and self-check answer keys at certain points. Instructions may be brief, but the statements should give the student enough directions to complete the task. Much thought must go into the development of activities for students.

The Alabama Performance Based Instruction Manual (1979) reports the following suggestions in designing practice activities:

1. Write the exercises, situations, or projects which require application of what is to be learned in the information lesson.

2. Design the projects, performances, or situations to be required in the application portion of the module.

Examples of integrated academic/vocational basic skills instructional activities using prerequisite **"common core skills"** competency statements

MATHEMATICS

Whole numbers

1. Write whole numbers from written text.

   See activity sheet 1 "Whole Number from Written Text."

2. Add and subtract single and multiple digit whole numbers.

   See activity sheet 2 "Addition and Subtraction of Whole Numbers."

3. Multiply and divide single and multiple digit whole numbers.

   See activity sheet 3 "Multiplication and Division of Whole Numbers."

4. Use arithmetic operations to solve word problems.

   See activity sheet 4 "Solving Word Problems."

5. Read and count single and multiple digit whole numbers.

   See activity sheet 5 "Reading Whole Numbers."

6. Round off single and multiple digit whole numbers.

   See activity sheet 6 "Rounding Whole Numbers."

7. Perform arithmetic operations using correct hierarchy.

   See activity sheet 7 "Using Correct Arithmetic Hierarchy."

Fractions

1. Read and write common fractions.

   See activity sheet 8 "Writing Common Fractions."

2. Add and subtract common fractions.

   See activity sheet 9 "Adding and Subtracting Common Fractions."

Decimals

1. Read and write decimals with one or more places.

   See activity sheet 10 "Writing Decimals."

2. Multiply and divide decimals with one or more places.

   See activity sheet 11 "Multiplication and Division of Decimals."

3. Add and subtract decimals with one or more places.

   See activity sheet 12 "Addition and Subtraction of Decimals."

4. Read and write percents.

   See activity sheet 13 "Reading and Writing Percents."

5. Compute percents.

   See activity sheet 14 "Computing Percents."

COMMUNICATION SKILLS

Written Expressions

1. Use plural words correctly.

   See activity sheet 15 "Use of Plural Words."

2. Use correct abbreviations of words.

   See activity sheet 16 "Abbreviations."

3. Use appropriately, words often confused because of similar sounds.

   See activity sheet 17 "Words with Similar Sounds."

4. Punctuate one's own correspondence.

   See activity sheet 18 "Punctuation."

5. Capitalize words correctly.

   See activity sheet 19 "Capitalization."

6. Write clear, correct statements to fill out forms accurately.

   See activity sheet 20 "Writing Clear, Correct Statements."

7. Spell correctly.

   See activity sheet 21 "Spelling Correctly."

8. Use verbs that agree with subjects.

   See activity sheet 22 "Subject Verb Agreement."

9. Use the correct tenses of verbs.

   See activity sheet 23 "Verb Tense."

Reading/Verbal Reasoning

1. Find, read, and understand information written on the 8th, 10th, and 12th grade level.

   See activity sheet 24 "Reading on the 8th, 10th, and 12th Grade Level."

2. Paraphrase a passage to confirm one's understanding of what was read.

   See activity sheet 25 "Paraphrasing Passages."

3. Read and understand short notes, memos, and letters.

   See activity sheet 26 "Reading Notes, Memos, and Letters."

4. Use dictionary to find meaning, pronunciation, and spelling of words.

   See activity sheet 27 "Using A Dictionary."

5. Use the telephone directory to make local and long distance calls.

   See activity sheet 28 "Using A Telephone Directory."

6. Use textbook features, such as index, table of contents, glossaries, etc.

   See activity sheet 29 "Using An Index, Table of Contents, and Glossaries, etc."

7. Distinguish between facts and opinions.

   See activity sheet 30 "Facts and Opinions."

8. Recall information accurately from memory.

   See activity sheet 31 "Recollection of Information."

9. Carry out correctly written or oral instructions.

   See activity sheet 32 "Following Written and Oral Instructions."

Activity #1
"Whole Numbers From Written Text"

ASSIGNMENT SHEET - WRITING NUMERALS

1. Write the numeral for each of the following.

   a. Five thousand

   b. One thousand fifty

   c. Six thousand two

   d. Two thousand, eight hundred

   e. Nine thousand, forty-seven

   f. Ten thousand, two hundred two

   g. Thirty-seven thousand, four hundred sixty-two

   h. Forty thousand, eight hundred ninety-seven

   i. Eight hundred four thousand, two hundred sixty-three

   j. Six hundred twenty-one thousand, one hundred one

   k. Eight thousand, six hundred twelve

   l. Twenty-seven thousand, four hundred three

   m. Five hundred six thousand, two hundred twenty-one

   n. Thirty-two million, six hundred thousand, one hundred twenty-nine

   o. Four hundred six million, ninety-seven thousand, ten

   p. Six billion, twenty-eight million, two hundred five thousand, eighteen

2. Give the place value of each digit in the following numeral: 2,345,178

   a. 2--

   b. 3--

   c. 4--

   d. 5--

   e. 1--

   f. 7--

   g. 8--

Activity #2
"Addition and Subtraction of Whole Numbers"

FIND THE SUM

1. 12 + 8 =

A. 30
B. 4
C. 20
D. 8
E. 96

2.
$$\begin{array}{r} 26 \\ 42 \\ 39 \\ 17 \\ +\ 78 \\ \hline \end{array}$$

F. 149
G. 820
H. 203
J. 102
K. 202

3.
$$\begin{array}{r} 235 \\ 142 \\ +\ 623 \\ \hline \end{array}$$

A. 1000
B. 999
C. 980
D. 990
E. 1001

SUBTRACT THE WHOLE NUMBER

4. 39 - 14 =

F. 25
G. 35
H. 16
J. 53
K. 52

5.
$$\begin{array}{r} 263 \\ -\ 143 \\ \hline \end{array}$$

A. 506
B. 32
C. 12
D. 406
E. 120

6.
$$\begin{array}{r} 3489 \\ -1639 \\ \hline \end{array}$$

F. 5128
G. 1950
H. 1850
J. 2050
K. 2250

Activity #3
"Multiplication and Division of Whole Numbers"

ASSIGNMENT SHEET - CALCULATING COST OF LUMBER

Directions: Figure the cost of the lumber in each of the problems listed below. Give your answer correct to the nearest cent. (M = 1,000 board feet)

1. One board 2" x 4" x 12' at $100.00 per M.

2. Five boards 1" x 8" x 10' at $80.00 per M.

3. Ten boards 4" x 4" x 15' at $245.00 per M.

4. Twenty boards 1" x 12" x 6' at $60.00 per M.

5. Six boards 2" x 6" x 14' at $75.00 per M.

6. A contractor ordered the following for framing a garage:

   36 studs, 2" x 4" x 8'
   9 sills, 1" x 4" x 20'
   4 plates, 2" x 6" x 20'
   24 rafters, 2" x 8" x 14'
   60 1" x 6" x 22' for sheathing

   a. Find the total number of board feet he ordered.

   b. If he paid $135.00 per M, how much did the order cost?

Activity #4
"Solving Word Problems"

ASSIGNMENT SHEET - PAYMENT FOR PIECEWORK

1. Solve these problems.

   a. Jim was hired to pick strawberries. If he is paid $0.07 for each quart, how much was he paid for picking 376 quarts?

   b. Sue Smith works in a shirt factory. For folding and packaging shirts, she is paid $0.04 per shirt. Last week she folded and packaged 122 dozen shirts. How much did she earn last week?

   c. John Doe is a driver education instructor. For each lesson he gives, he is paid $2.75. Last Saturday he gave 12 lessons. How much did he earn?

   d. Sam Stone is paid $5.28 for each gross (144) of brass bushings he polishes. Last week he polished 7056 bushings. What was his week's pay?

   e. Mrs. Rose is a seamstress. She is paid $2.25 for hemming a dress or skirt; $1.00 for mending a tear in clothing; and $.50 for sewing tucks in a waist of a dress or skirt. Last week Mrs. Rose hemmed 15 dresses and five skirts, mended 8 small tears, and tucked the waists of five skirts. How much did she earn last week?

   f. Jim West sells newspapers. He receives five cents per copy for each daily he sells and 10 cents per copy for each Sunday paper he sells. Last week, Jim sold 473 daily newspapers and 689 Sunday papers. How much did he earn?

   g. Jess and Joe operate a shoe shine stand. They charge 25 cents to shine a pair of shoes. Last week, Jess shined 47 pairs of shoes and Joe shined 39. How much did each boy earn?

   h. Mary works in a factory, she is paid 12 cents for each shirt collar she sews on a shirt. Yesterday she put collars on 188 shirts. What were her wages for the day?

   i. Mildred is employed by a beauty salon. She is paid $4.00 for each permanent and $1.75 for each hair set or haircut. Last week she gave five permanents, 10 hair sets, and eight haircuts. How much did she earn?

   j. John is paid $2.00 for each car he polishes; $3.00 for each wash and grease job; $1.25 for each flat that he fixes. How much did he earn last week when he polished 15 cars, washed and greased nine cars, and fixed 13 flats?

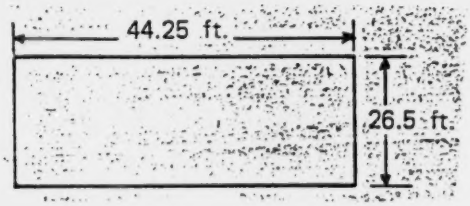
Activity #5
"Reading Whole Numbers"

ASSIGNMENT SHEET APPLIED WORD PROBLEMS

Directions: Solve these applied word problems and show your work.

1. An electrician cut the following lengths of wire from a roll: 12,375 feet, 8.875 feet, and 21.625 feet. What was the total amount of wire cut from the roll?

2. A maintenance foreman wishes to fence a rectangular area for storage. If the area is 26.5 feet wide and 44.25 feet long, how much fence will he need?



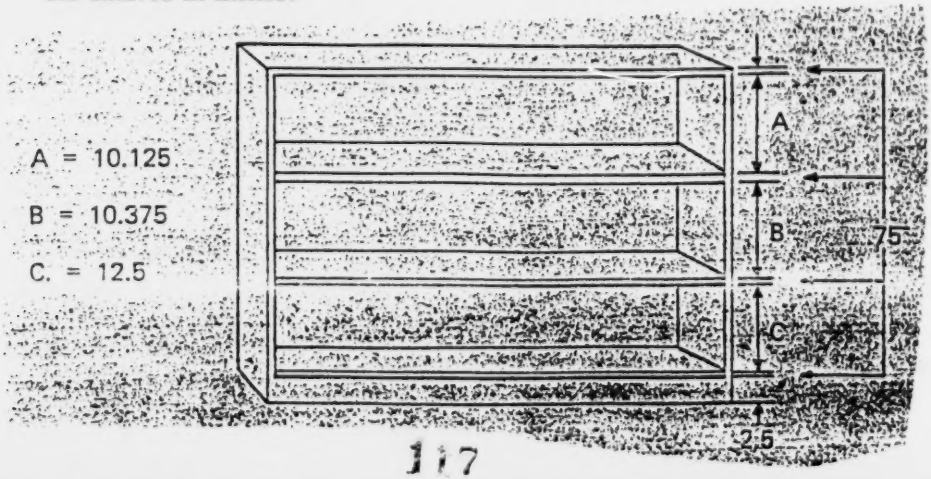
3. The thicknesses of several pieces of metal were measured with a micrometer. They were found to be .035, .608, .0513, and .026 inches. What is the combined thickness of the four pieces of metal?

4. A television repairman earned the following amounts in five days: $30.78, $41.63, $35.16, $43.17, $29.83. What was his total earnings for the week?

5. A truck driver loaded three cartons on his truck. The weights of the cartons were: 73.8, 95.25, and 608.4 pounds. What was the weight of his load?

6. A plumber worked for one week on a construction job. The number of hours that he worked each day were: 10.75, 8.5, 9.33, 8.0, 6.25. How many hours did he work that week?

7. A cabinet maker built this set of book shelves. What was the total height of the shelves in inches?

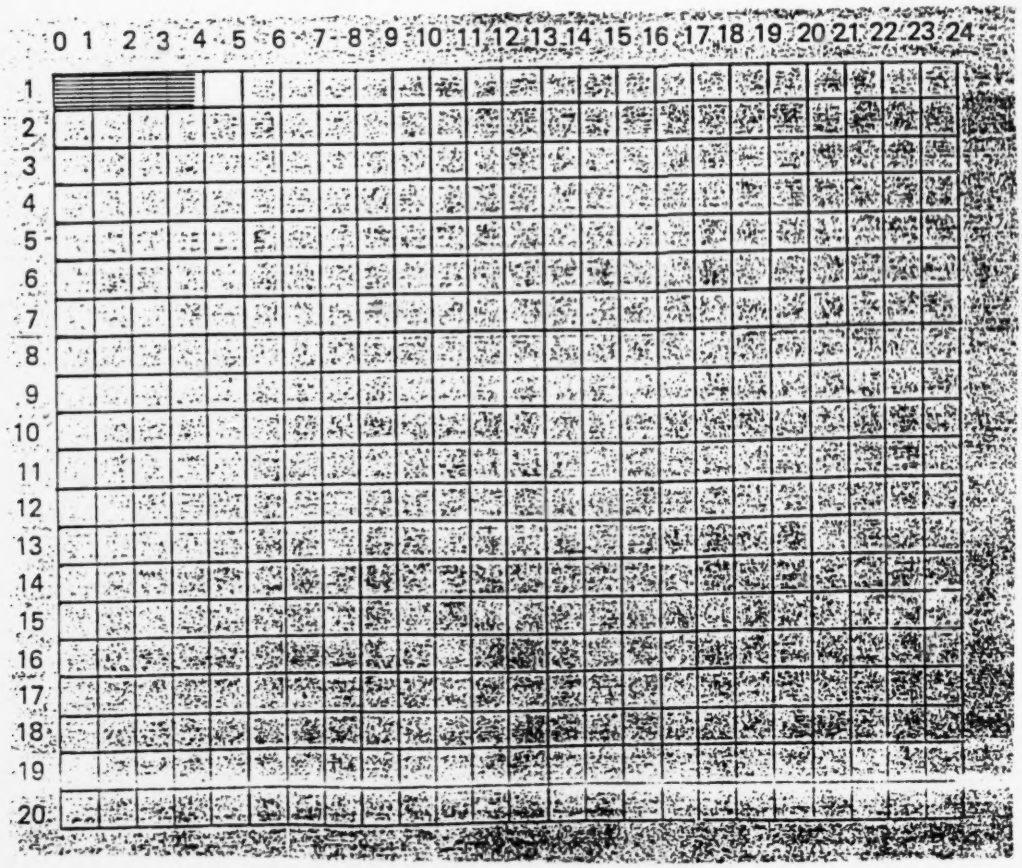


Activity #6
"Rounding Whole Numbers"

ASSIGNMENT SHEET - NEARER WHOLE NUMBER

Directions: Shade the columns as in problem 1 and then round the following numbers to the nearer whole number.

1. 3.7
2. 1.4
3. 2.57
4. 2.508
5. 9.3451
6. 5.5
7. 6.0
8. 7.19
9. 8.359
10. 22.4731
11. 18.9
12. 20.356
13. 17.752
14. 6.346
15. 12.815
16. 15.7
17. 22.63
18. 8.691
19. 18.98
20. 4.34



Activity #7
"Using Correct Arithmetic Hierarchy"

ASSIGNMENT SHEET - PIECEWORK WITH A REQUIRED STANDARD

Directions: Find the pay for each of the jobs listed in the table below. A standard is required of each worker and a bonus is given for those who make above the standard and a fee is charged for each defective part.

JOB	RATE	STANDARD	BONUS	DEFECTIVE PARTS FEE
A	$.03	240	$.015	5
B	$.04	200	$.02	8
C	$.05	180	$.03	10
D	$.025	360	$.01	3

Find the pay for the day.

	JOB	PARTS	DEFECTIVE	
1.	A	262	8	
2.	B	210	5	
3.	C	196	7	
4.	D	384	11	
5.	A	242	4	
6.	B	292	3	
7.	C	182	6	
8.	B	206	3	
9.	C	208	8	
10.	C	200	8	
11.	D	370	8	
12.	A	244	10	
13.	D	376	9	
14.	A	284	6	
15.	B	250	8	

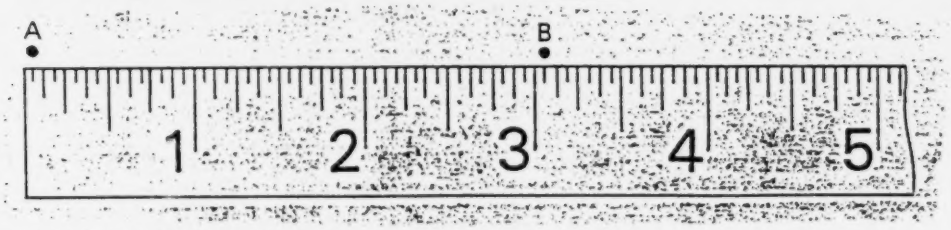
Activity #8
"Writing Common Fractions"

ASSIGNMENT SHEET - ONE-SIXTEENTH SCALE RULER

1. a. Each inch on the ruler below is divided into _____ equal parts.

   b. Each small unit represents what fraction of an inch? _____

   c. How many sixteenths are there in an inch? _____



   d. How far is point A from the zero end of the ruler? _____

   e. How far is point B from the zero end of the ruler? _____

2. a. How many 1/2-inch units are in an inch? _____

   b. How many 1/8-inch units are in an inch? _____

   c. How many 1-inch units are in an inch? _____

   d. How many 1/4-inch units are in an inch? _____

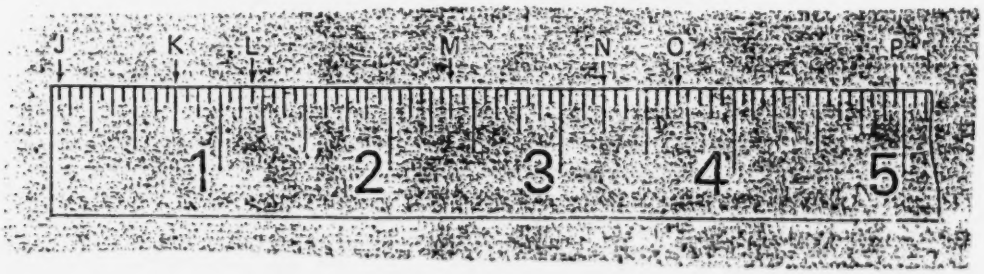
   e. How many 1/16-inch units are in an inch? _____

3. a. Each inch on the ruler shown below is divided into _____ equal parts.

   b. Each part is called a _____of an inch.

   c. There are how many sixteenths in one inch? _____

   d. There are how many sixteenths in one-half inch? _____



Activity #9
"Adding and Subtracting Common Fractions"

1. 1/2 + 2/3 =

   F. 3/5

   G. 7/6 or 1 1/6

   H. 3/6

   J. 9/6 or 1 1/2

   K. 8/6 or 1 1/3

2. 3/4 + 1/2 =

   A. 3/8

   B. 4/6

   C. 9/8 or 1 1/8

   D. 4/5

   E. 5/4 or 1 1/4

3. 5/8 + 3/4 =

   F. 11/32

   G. 1/8

   H. 11/9 or 1 3/8

   J. 8/12

   K. 1/3

4. 5/8 - 1/4 =

   A. 3/4

   B. 3/8

   C. 3/2 or 1 1/2

   D. 1/2

   E. 1/8

5. 1/2 - 1/3 =

   F. 1/5

   G. 1/2

   H. 1/3

   J. 1/6

   K. 1/4

6. 3/7 - 1/4 =

   A. 2/11

   B. 5/28

   C. 4/11

   D. 2/3

   E. 19/28

Activity #10
"Writing Decimals"

1. Match the correct decimal notation for each of the following.

_____a.	5 6/10	1.	7.83
_____b.	1 2/100	2.	5.006
_____c.	87/1000	3.	78.3
_____d.	7 83/100	4.	.087
_____e.	5 6/100	5.	.783
_____f.	5 6/1000	6.	87.7
_____g.	78 3/10	7.	5.6
_____h.	87 7/10	8.	102.0
_____i.	102	9.	5.06
_____j.	783/1000	10.	1.02

2. Write the numbers in decimal notation for each of the following.

a. 63 9/10

b. 5 93/100

c. 5 93/1000

d. 5 93/10,000

e. 3 825/1000

f. 38 95/100

g. 38 95/1000

h. 42 3/10

i. 402 3/10

j. 897 97/100,000

k. 96/100

Activity #11
"Multiplication and Division of Decimals"

Multiplication:

(NOTE: Total the number of decimal places to the right of the decimal point in both the factors. This total represents the correct number of decimal places in the product.)

Examples: $4.2 \times 0.3 = 1.26$ $1.4 \times 0.49 = 0.686$

$1 + 1 = 2$ places $1 + 2 = 3$ places

1. Using the examples above, explain how the decimal point was located in each of these problems.

   a. $14.7 \times 0.13 = 1.911$

   b. $0.07 \times 0.004 = 0.00028$

   c. $2.5 \times 7.5 = 18.75$

   d. $0.002 \times 15.4 = 0.0308$

   e. $15 \times 1.5 = 22.5$

   f. $0.008 \times 0.9 = 0.072$

2. Correctly place the decimal points in these products. Add zeros when needed.

   a. $224 \times 2.4 = 5376$

   b. $2.24 \times 0.024 = 5376$

   c. $0.688 \times 0.45 = 30960$

   d. $22.4 \times 0.24 = 5376$

   e. $0.0224 \times 0.24 = 5376$

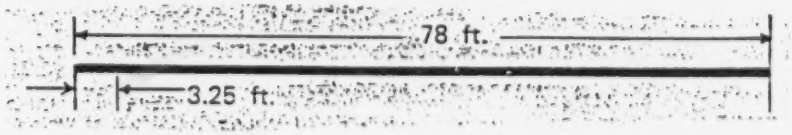
   f. $68.8 \times 0.45 = 30960$

Division:

1. Mrs. Lockman bought 12 square yards of carpeting for $107.40. What was the price per square yard?

2. Jay Brown spent $4.42 on 13 gallons of gasoline. What was the price per gallon?

3. A 78 foot cable is to be marked at intervals of 3.25 feet for testing. Into how many such intervals will the cable be divided?



4. Dean and his father went ot buy a small truckload of watermelons. The melons were priced at 45 cents each. How many melons could they buy for $30.60?

5. Gary feeds his pets 3 pounds of oats a day, or 1095 pounds a year. A bushel of oats weighs 32 pounds. How many bushels of oats does Gary need for the year? (Carry answer to 3 decimal places)

Activity #12
"Addition and Subtraction of Decimals"

Addition:

Directions: Write these decimal numbers in proper form and find the sum.

1. 5.01 + .0074 + 6.9 + 71 =
2. 38.03 + .52 + .064 + 9 =
3. 973.22 + .65 + .0015 + 25 =
4. $49.19 + $.78 + $5 +$15.07 =
5. 2,744 + 73.27 + .02462 + 73.69 =
6. $29.98 + $.87 + $6 + $13.02 =
7. 4.85 + .0026 + 9.5 + 56 =
8. 53.52 + .58 + .074 + 8 =
9. 314.46 + .82 + .0037 + 31 =
10. $29.63 + $.67 + $9 + $67.65 =

Subtraction:

Directions: Rewrite these problems. Subtract and check your work.

1. 868.87 - 516.89 =
2. 567 - 19.856 =
3. 198 - 56.987 =
4. 567.94 - 59.78 =
5. $815.23 = $65.98 =
6. $20.03 - $15.88 =
7. 694.7 - 24.3 =
8. 5,000 - 892.66 =
9. $15 - $12.53 =
10. 219.3 - .085 =

Activity #13
"Reading and Writing Percents"

1. Express each percent as a fraction.

   a. 50%

   b. 25%

   c. 33 1/3%

   d. 36%

   e. 28%

   f. 14 2/7%

   g. 21%

   h. 45%

   i. 66 2/3%

   j. 70%

2. Express each percent as a decimal.

   a. 47%

   b. 15%

   c. 33.3%

   d. 62%

   e. 75%

   f. 3%

   g. 16.8%

   h. 9%

   i. 10%

   j. 50%

Activity #14
"Computing Percents"

ASSIGNMENT SHEET - FIGURING PERCENTS

1. What does it mean to say 100 percent of the class is present today?

2. There are 100 pupils in Podunk High School. Fourteen of them are absent. What percent of the pupils are absent?

3. If 14 of the pupils are absent (Problem 2), how many are present? What percent are present?

4. There are 100 cents in a dollar. Twenty-five cents is what percent of a dollar? Five cents is what percent of a dollar?

5. There are 100 books in a library. Ninety-four have been read. What percent of the books have been read?

6. If 94 of the books (Problem 5) have been read, how many have not been read? What percent have not been read?

7. If 11% of the pupils in a school are absent, what percent are present?

8. If 6% of the books that a store had in stock were not sold, what percent were sold?

9. If 60% of the cyclists in town had licenses, what percent did not have licenses?

10. Byrl raises white rats. Ten percent of his rats are a year old; and 40% are over a year old. What percent are less than a year old?

11. Richard has three kinds of traps: No.1 traps, No.1 1/2 traps, and No.2 traps. Eighty percent of his traps are No.1 traps, and 15% are No.1 1/2 traps. What percent are No.2 traps?

12. The Smiths spent 22% of their income for their house, 17% for food, 15% for clothes, and 8% for fun. What percent was left for other things?

13. Chester has finished 75% of the painting he is doing . What percent does he still have to do?

14. Betty has completed 40% of her dress. What percent does she still have to do?

15. If you have completed 93% of these problems, what percent do you still have to do?

Activity #15
"Use of Plural Words"

Form the plurals of nouns. Complete each of the following sentences with the proper plural form of the noun given in parentheses.

1. Like the main paths in the body's circulatory system, main traffic routes are _____.(artery)

2. Thousands of men wearing _____ marched down Fifth Avenue during the Shriners Parade. (fez)

3. The team practiced throwing forward _____ all day. (pass)

4. Isn't there a novel about Vietnam entitled the _____*of Eden? (Alley)*

5. My little cousin could not play with his presents because no one had remembered to bring _____. (battery)

6. Six _____, two wizards, and a warlock came trick-or-treating at our house on Halloween. (witch)

7. Dr. Natalie Karakov specialized in building _____.(rookery)

8. The lifespan of some _____is as little as a single day. (insect)

9. At the experimental farm, Roberta was given the job of overseeing the _____. (hatchery)

10. The best place to study the behavior of _____is in the wild. (monkey)

Activity #16
"Abbreviations"

(Auto Mechanics)

Using this handout, the student will match abbreviations with terms with 90 percent accuracy.

1.	A/C	____ Idle Speed Control
2.	ACC	____ Closed Loop
3.	A/F	____ Pulse Air Injection System
4.	ATDC	____ Canister Purge
5.	ATS	____ Positive Crankcase Ventilation
6.	CAL-PAC	____ Air Conditioning
7.	CAT CONV	____ Kilometers
8.	CCC	____ Power Brakes
9.	CL	____ Electronic Spark Control
10.	CP	____ Federal Motor Vehicle Standards
11.	CU IN	____ Distribution Ignition System
12.	DIS	____ Air Fuel (Ratio)
13.	ESC	____ Calibration Package
14.	FMVS	____ Cubic Inch
15.	HC	____ Hydrocarbons
16.	ISC	____ Automatic Climate Control
17.	KM	____ Computer Command Control
18.	PAIS	____ After Top Dead Center
19.	P/B	____ Air Temperature Sensor
20.	PCV	____ Catalytic Converter

Activity #17
"Words with Similar Sounds"

Use a dictionary to look up the following word pairs. Write a definition of each and explain the differences between them. Write a sentence for each word that clearly shows you know how to use it correctly.

adverse/averse
prescribe/proscribe
raze/raise
impassable/impassible
flaunt/flout
device/devise
judicial/judicious
laudable/laudatory
regardless/irrespective
repertoire/repertory
sympathy/empathy
reverend/reverent
discreet/discrete

Activity #18
"Punctuation"

Punctuation - In the following sentences, some of the necessary punctuation is missing. Write in the missing punctuation marks.

1. The bill which I received today was incorrect

2. Please remember to include your address and phone no on the appl form.

3. When will you be able to return the call

4. Stop that immediately

5. Jogging bicycling swimming and playing tennis are all very good sports for increasing heart and lung capacity.

6. The report must be delivered to 7000 144th Street Seattle WA as soon as possible.

7. Are you planning to go with us or will you drive your own car?

8. His most recent book Climbing to the Top has not been selling very well.

9. Carrying her shoes in her hand she tiptoed across the floor and up the stairs.

10. Even though we had made reservations we had to wait nearly an hour.

11. All future payments of course will be made directly to the accounting office.

12. The director announced "That subject will be discussed at our next meeting."

Activity #19
"Capitalization"

I. Capitalization - In the following sentences, cross out letters which should be capitalized and write in the capital letter above:

1. he is the best worker in the entire company.

2. His uncle charlie also has a dog named charlie.

3. Is the 17th of october a sunday or a monday?

4. st. paul and minneapolis, minnesota, are widely known as the "twin cities."

5. I recently applied for a job at hampton industries, a manufacturer of electronic circuitry.

6. Our new offices are located downtown in the bramfield building.

7. The u.s. olympic committee helps to raise money for our athletes to compete in the olympics.

8. The author of walking across country was recently interviewed on that radio program.

9. many people prefer to work outdoors because they feel more free.

10. I suggest that you call dr. andrews, the new veterinarian, to ask about blackie's injured leg.

Activity #20
"Writing Clear, Correct Statements"

COMPOSE A LETTER using the following information.

You are the manager of a computer company in Bismark, Texas. Your organization is planning a spring-break trip to Aspen, Colorado, to ski and take pictures. Write to the Snowtop Lodge requesting the cost of six double rooms for five days (March 3 through March 7) and the availability of the rooms. Find out if a deposit is required, the amount of the deposit, and the date the deposit is due. You also would like any information the hotel might have on the local skiing facilities.

Address the letter to Snowtop Lodge, 9999 Frosty Way, Aspen, Co 53662.

Activity #21
"Spelling Correctly"

DIRECTIONS: Given below are definitions of "consumer" terms used in clothing advertising. Select the proper spelling for the word being defined and write the letter of the correct response in the space provided.

_____1. A sale, generally at reduced prices, to dispose of old or out-of-season merchandise.

a. cleerence
b. clearance
c. clearence
d. cleerinse
e. clearinse

_____2. Clothing acceptable only one time of the year; such as swimwear.

a. seesunel
b. seesonal
c. seasunnel
d. seasonle
e. seasonal

_____3. To reserve (or save) for the future at the store with a small deposit.

a. layway
b. awaylay
c. layaway
d. laway
e. layalway

_____4. A ticket given by the store when sales item is no longer available, thus allowing the consumer to purchase the item at a later date for the sale price.

a. rein check
b. rane check
c. rain chek
d. rain check
e. rainchek

_____5. A man-made fabric, constructed from polymer resins.

a. pollyaster
b. polliester
c. pollyester
d. polyester
e. poliester

Activity #22
"Subject/Verb Agreement"

Choose the standard form of the verb from the two forms given in parentheses.

1. Exactly eighteen ounces of water (fills, fill) this size canteen.
2. Leslie Stahl is the only one of those reporters who (is, are) based in Washington.
3. The bunch of ripe red grapes (is, are) delicious.
4. Iceland is one of those countries that (has, have) little pollution.
5. Gary's attitude, as well as his study habits, (was, were) improving.
6. Neither the fans nor the coach (approve, approves) of the referee's call.
7. Three-fourths of these diamonds (come, comes) from Africa.
8. There (is, are) several reasons for Siona's decision.
9. Everybody in the drama classes (performs, perform) in at least one play a year.
10. In my locker (sit, sits) my tennis shoes and racket.
11. *The Martian Chronicles* (describe, describes) the first settlers' adventures on Mars.
12. One of the players (is, are) going to endorse a new soft drink.
13. Onto the field (march, marches) the band.
14. There (is, are) extracurricular activities that will help new students meet each other.
15. Neither the elevator nor the escalator (go, goes) to the top.
16. The jury (have, has) adjourned to discuss its verdict.
17. Jackie's favorite dessert (is, are) fudge brownies.
18. Where (is, are) the southernmost settlements on Earth?
19. Politics (is, are) more than a hobby to Chester.
20. Toward the pink sand beach and the crystal sea (face, faces) the windows of our hotel room.

Activity #23
"Verb Tense"

Use past and past participle forms correctly. In the sentences below, the present form of the verb is given in parentheses. Substitute either past or past participle, as necessary.

1. Those two dogs have (fight) over the rubber bone before.

2. The sun (shine) on the Arctic town for the first time in months.

3. If the pranksters had not (fling) the keys into the lake, we would not have been late.

4. Last Saturday I fell and (hurt) my ankle.

5. It was the wagonmaster who (lead) the pioneers across the plains and mountains.

6. No, Larissa has never been (sting) by a wasp.

7. Samuel did not realize how much room and board (cost).

8. In 1966, scientists (catch) a live pygmy opossum, believed to have been extinct for twenty thousand years.

9. The votaries had (bring) sacrifices of grain and fruit to the alters.

10. "I have (lend) you my favorite records," said Charity.

11. "Nobody knows the burdens I have (bear)," sighed the professor dramatically.

12. Angi (break) the state record for backstroke.

13. The snake handler had never been (bite) by a snake.

14. The sturdy cloth was not (tear) by the briars.

15. Father has (speak) to me on that subject many times.

16. In our grandfather's garden, broccoli, corn, squash, and beans (grow) side by side.

17. Dr. Melinski has studied scallops, but she has never (eat) them.

18. Didn't Emily Dickinson write that the sun (rise) "a ribbon at a time?"

19. Even before the volcano erupted, the earth (shake).

20. After the winds had (below) across the desert, the dunes changed shape.

Activity #24
"Reading on the 8th, 10th, and 12th Grade Level"
(12th Grade Reading Example)

WEEKLY ACCIDENT AND SICKNESS INSURANCE

If while insured, you become totally disabled as a result of a non-occupational injury or sickness, benefits will be payable each week while you are so disabled and under the care of a licensed physician.

Benefits will be payable beginning on the first day in case of total disability due to injury, and on the eighth day in case of total disability due to sickness; however, no benefits shall be payable for any day for which you are entitled to payment under our Company's Sick Leave Plan.

These benefits will continue for the maximum duration specified in the Schedule of Insurance for any one continuous period of disability. Successive disabilities separated by less than two weeks of full-time work will be considered one disability, unless the subsequent disability is due to a different cause and does not begin before you return to full-time work.

After your return to work, if you again become totally disabled from a different and unrelated cause, you will again be eligible for benefits to continue up to another maximum duration as described above.

In no event will benefits be payable while you are not under the care of a licensed physician.

In the event of disability due to pregnancy, benefits will be available provided pregnancy commences while you are insured.

After reading the above handbook excerpt, please answer the following questions.

1. When you are injured or sick and cannot come to work, you are_____.

2. The payments you receive from the insurance company while you are sick are called

_____.

Activity #25
"Paraphrasing Passages"

References:

1. William Toboldt and Larry Johnson, AUTOMOTIVE ENCYCLOPEDIA, 1981 Ed., Goodheart-Willcox Co., Inc. Chapter on "Storage Batteries."

2. Martin Stockel, AUTO SERVICE AND REPAIR, 1978 Ed., Goodheart-Willcox Co., Inc. Chapter 22.

3. William Crouse, AUTOMOTIVE MECHANICS, 8th Ed., Gregg/McGraw-Hill Book Co. Chapter 24 on "Automotive Batteries."

Study Questions:

1. What is the reserve capacity of a battery?

2. What does the lead oxide in a positive plate and the sponge lead in the negative plate change to when a battery is discharged?

3. What are the six (6) basic steps in battery maintenance?

Activity #26
"Reading Notes, Memos, and Letters"

Note From Supervisor:

Joe:

Please take care of this order for me. There are just a couple of things you should know before you start.

1. The order calls for 9 full units of 48805. We only have 8 1/2 units. Send what we have and make the adjustments to the Bill of Lading.

2. The order also calls for only 10 units of 48814. We have 11 1/2 units in stock. I'd like you to ship the entire 11 1/2 units. Make the changes on the Bill of Lading.

Take the shipments for the units 48805 form the V76JL skids numbered between 150 and 250.

Take the shipments for the units 48814 from the V76JL skids numbered between 245 and 345.

Be sure to record all this on the bill of lading. Let me know with a note how all this works out.

Thanks,

Jan

Activity #27
"Using a Dictionary"

1. What is electromagnetic induction?

2. What is self-induction?

3. What is mutual induction?

4. Describe a capacitor?

5. How is a voltmeter connected in a circuit?

6. How is an ammeter connected in a circuit?

7. What does an ohmmeter measure?

Activity #28
"Using a Telephone Directory"

Refer to the following phone book strip and answer the following question.

Hamel Robt M 16	Highbridge Dr.....333-2125
Hamel Robt J 103	Bingham Rd.....737-1430
Hamel Robt S 18	Jenkins Prov.....245-1021
Hamel Ronald C. 21	Quail Dr.....781-3811
Hamel S.A. 21	Dogwood Cir.....245-1560

What is the telephone number of Robert Hamel who lives on Bingham Rd.?

(a) 333-2125
(b) 737-1340
(c) 737-1403
(d) 245-1560
(e) none of these

Activity #29
"Using a Table of Contents"

Reading the table of contents is a good way to find out what is in a book or manual. It's a good habit to read through the table of contents of any book. You might see a subject that you hadn't thought of that might be of interest to you.

Think about the books and manuals you use on your job. Which of them have tables of contents? Make a list of some of the manuals you have at work or at home that have tables of contents.

1._____ 5._____

2._____ 6._____

3._____ 7._____

4._____ 8._____

The next time you use these books take a minute to read the table of contents.

Activity #30
"Facts and Opinions"

Determine whether the following statements are true by referring to the source indicated in parentheses.

1. You can obtain a passport by contacting your local post office.(Contact the post office.)

2. Alan Shepard was the first American astronaut in space. (Refer to an encyclopedia.)

3. The average rainfall in Hawaii is thirty-two inches per year. (Refer to an almanac.)

4. Andrew Jackson and Richard Nixon were forced to resign from the Presidency of the United States. (Refer to an encyclopedia or to a textbook.)

5. The Cadillac was named after the founder of Detroit. (Refer to an encyclopedia.)

6. *The Canterbury Tales* was written by John Donne. (Refer to an English literature anthology or textbook.)

7. Teachers in your state are required by law to obtain a Master's degree. (Ask one of your teachers.)

8. The word *camera* derives from a Greek word for a type of *room*. (Refer to a dictionary.)

9. Robert Frost, the poet of New England, was born in San Francisco. (Refer to a biography or to a literary reference work.)

10. Germany is the largest country in Western Europe. (Refer to an atlas.)

Activity #31
"Recollection of Information"

1. Make visual inspection under the hood of auto. Notice the wiring.

2. Identify any primary wire and explain the function of the insulating material covering the conductor.

3. Explain the functions of the conductor.

4. Explain the function of a fuse panel showing insulation at work.

5. Secure an old spark plug from your instructor.

6. Identify the two conductors and the two insulators found in the spark plug.

7. Explain how the two conductors and the two insulators of a spark plug function together to perform a task that is important toward the functioning of the ignition system.

1. What is an electrical conductor?

2. What is an insulator?

3. When you rub a glass rod with silk, what kind of charge is acquired by: (a) the glass rod, and (b) the silk?

4. The property of metal as a good conductor of electricity is determined by?

5. Define an electric field.

Activity #32
"Following Written and Oral Instructions"

"Hello. This is Jan. I have some questions about the shipment going to Fullerton, California. First of all, can you give me the street address where we're sending this shipment?"

1._____

"Great. Now, what shipping order number do you have on that Bill of Lading?"

2._____

"Thanks. A couple other things. I need the Car Number and I can't read it on my copy. Can you make it out on yours? What's the Car Number?"

3._____

"I also need the Seal Number. I can only read the first number. Can you give me the rest of it?"

4._____

"One last thing and I'll let you go. What's the routing on this order?"

5._____

"Thanks for your help. See you this afternoon. Bye."

Activities Showing Relationship of Basic Skills to Occupational Tasks

Team Members:

_____

_____

_____

***Reminder:**
Do the activities:
1. show integration of necessary academic as well as vocational skills?
2. allow practice or demonstration of competency or mastery of the task?

OCCUPATIONAL TASKS	ACTIVITIES*
1. Using wiring diagrams, the student will determine wire and fuse sizes with 90% accuracy.	1.(Reading) Using a wiring diagram provided by the instructor, the student will interpret and record on an activity sheet wire sizes using amperage loads shown on a diagram with 90% accuracy.
	2.(Math) Using a wire gauge the student will obtain and measure three short lengths of solid electrical wire. The student will then record gauge size in thousandths of an inch and convert thousandths of an inch to mils of diameter by correctly moving the decimal point to the right with 90% accuracy.
2. Using meters (V.O.A.) and testers, the student will record on the attached form the appropriate readings with 100% accuracy.	1.(Reading) The student will read and understand the meter reading activity sheet and set up a meter correctly for measuring the required electrical quantities with 90% accuracy.
	2.(Math) Given two known electrical quantities the student will demonstrate the use of Ohm's Law by calculating the unknown electrical value with 100% accuracy. Verification of identified value can be measured by the resulting electrical quantity with 100% accuracy.

Activities Showing Relationship of Basic Skills to Occupational Tasks

Team Members:

_____

_____

_____

***Reminder:**
Do the activities:

1. show integration of necessary academic as well as vocational skills?
2. allow practice or demonstration of competency or mastery of the task?

OCCUPATIONAL TASKS	ACTIVITIES*
1.	1. 2,
2.	1. 2.

Activities Showing Relationship of Basic Skills to Occupational Tasks

Team Members:

*Reminder:
Do the activities:
1. show integration of necessary academic as well as vocational skills?
2. allow practice or demonstration of competency or mastery of the task?

OCCUPATIONAL TASKS	ACTIVITIES*
1.	1. 2,
2.	1. 2.

Activities Showing Relationship of Basic Skills to Occupational Tasks

Team Members:

***Reminder:**
Do the activities:
1. show integration of necessary academic as well as vocational skills?
2. allow practice or demonstration of competency or mastery of the task?

OCCUPATIONAL TASKS	ACTIVITIES*
1.	1. 2,
2.	1. 2.

INTEGRATING BASIC SKILLS INTO THE VOCATIONAL/TECHNICAL CURRICULA USING COMPETENCY-BASED INSTRUCTION

BIBLIOGRAPHY 11/19/90

Abbott, Alan, Marine Trades, COM-LINK, Competency Based Vocational Curricula with Basic Skills and Academic Linkages, ED 314571 Educational Resources Information Center (ERIC), July, 1989.

A Suggested List of Terms and Definitions. Richmond: Virginia Department of Education, 1979.

Academic Preparation for College: What Students Need To Know and Be Able to Do, The College Board, New York, 1983. 46 pgs.

Alabama Performance Based Instruction: Developing Individualized Modules for Vocational Technical Education, State of Alabama, Department of Education, Division of Instructional Services, Montgomery, Alabama, June 1979, 104 pgs.

Allen, Charles R., The Instructor, The Man, and The Job, J. B. Lippincot Co., Philadelphia, 1919.

Averill, Donald F., Vocational Education Administration and National Priorities, ED 220129 Educational Resources Information Center (ERIC), May, 1982.

Baker, Meryl S. and Kent H. Huff, The Evaluation of a Job-Oriented Basic Skills Training Program--Interim Report, July 1979-July 1981, ED 210435 Educational Resources Information Center (ERIC), November, 1981.

Basic/Essential Skills Taxonomy, The, Arizona Department of Education, 1535 West Jefferson, Phoenix, Arizona 85007, (602) 542-5282.

Basic Skills in the Workplace, The Bottom Line, U.S. Department of Labor, Office of Public Information, 200 Constitution Avenue, NW, Room 52307, Washington, DC 20210.

Beach Joyce, Fourteenth Amendment Considerations and Competency Testing, Massachusetts Competency Testing Program, Fitchburg State College.

Beck, Robert, H., Polytechnical Education: A Step, National Center for Research in Vocational Education, University of California, Berkeley, September, 1990.

Bee County College Competency-Based Skills Curricula for Disadvantaged Adult, Catalog of Instructional Aids, Texas Higher Education Coordinating Board, Community Colleges and Technical Institutes Division, Austin, Texas, 1988, 43 pgs.

Biennial Report of Progress Under and Compliance With The Master Plan for Vocational Education and An Evaluation of Vocational Education Programs, State Board of Education, Texas Education Agency, Austin, Texas, January 1989, 45 pgs.

Bottoms, Gene and Stephanie A. Korcheck, Assessing the Reading, Mathematics, and Science Achievement of 1988 Secondary Vocational Completers, A report of the 1988 Baseline Assessment of the SREB-State Vocational Education Consortium Using the National Assessment of Educational Progress, Linking Vocational and Academic Education, Southern Regional Education Board, Atlanta, Georgia 30318-5790, 1989.

Bowen, Blannie E., Ed. and David J. McCracken, Maintaining Effective Classroom Control in Vocational Education, ED 213944 Educational Resources Information Center (ERIC), June, 1981.

Briers, Gary E., Richard J. Norris, and Tom Dayberry, "Basics: The Key To The Future," The Agricultural Education Magazine, May, 1987, pp. 5-7.

Brown, Daniel W., "Coping With Competencies," The Agricultural Education Magazine, March 1989, Vol. 61, No. 9, p.4.

Building A Quality Workforce, U.S. Department of Labor, Office of Public Affairs, Employment and Training Administration, 200 Constitution Avenue NW, Room S-2307, Washington, D.C. 2021.

Building Communities: A Vision For A New Century, A Report of the Commission on the Future of Community Colleges, American Association of Community and Junior Colleges, National Center for Higher Education, Washington, D.C. 20036, (202) 293-7050, 1988.

Building English Skills, McDougal, Littell and Company, Evanston, Illinois, 1985.

Building Instructional Skills: Introductory Series, North Carolina Community College System, 21 pgs.

Burns, James R. and Darrell N. Eubanks, MICROCOMPUTERS: Business and Personal Applications, Instructor's Manual and Test Bank to Accompany, West Publishing Company, St. Paul, 1988.

Cafeteria Workers Skill Enhancement Training, A Proposal of AFL-CIO, Human Resources Development Institute, October 13, 1989.

Canfield, Albert A., Canfield Learning Styles Inventory, Form S-A, Humanics Media, Birmingham, Michigan 48011, April, 1983, 55 pgs.

Career Opportunities in Texas: A Master Plan for Vocational Education, State Board of Education, Austin, Texas, January 10, 1987, pp. 52.

Carnes, John, TEXCOM: Texas System for Developing A Competency-Based Curriculum: Building A Framework for Curriculum Development In Postsecondary Vocational-Technical Education, A workshop manual, A project conducted by Northeast Texas Community College and funded by The Texas Higher Education Coordinating Board, 1990, 83 pgs.

Carnevale, Anthony, Leila J. Gainer, and Eric R. Schulz, Training the Technical Work Force, Jossey-Bass Publishers, San Francisco, 1990, 196 pgs.

Carnevale, Anthony P., Leila J. Gainer, and Ann S. Meltzer, Workplace Basics: The Skills Employers Want, The American Society for Training and Development, U.S. Department of Labor Employment and Training Administration, October 1988, 33 pgs.

Carnevale, Anthony P., Leila J. Gainer, and Ann S. Meltzer, Workplace Basics Training Manual, Jossey-Bass Publishers, San Francisco, 1990.

Carnine, Douglas, "New Research on the Brain: Implications for Instruction," Phi Delta Kappan, January, 1990, pp. 372-377.

Carroll, John B., "The NAEP Reading Proficiency Scale Is Not A Fiction: A Reply to McLean and Goldstein," Phi Delta Kappan, June, 1988, pp. 761-764.

Case, Larry D., "The Hidden Curriculum," The Agricultural Education Magazine, May, 1987, pp 7-9.

CBAE: Linking Education, Human Services, Business and Industry, Proceedings of the Annual National Competency-Based Adult Education Invitational Conference (6th Boston, Massachusetts, January 27-29, 1982), ED 219589 Educational Resources Information Center (ERIC), July, 1982.

CBE for Central America, Convergent Systems, Inc. (CSI), 245 E. 6th St., St. Paul, MN 55101, (612) 221-0587; or Washington Risso, OE, Coordinator of CATC, CADERH, Avenida de Republica de Chile 341, Colonia Palmira, Tegucigalpa, Honduras, CA

Chall, Jeanne S., "The Uses of Educational Research: Comments on Carbo," Phi Delta Kappan, October, 1989, pp. 158-160.

Chaloupka, Diana and Papierniak, Kathleen, Ed., Vocational Occupations for Industrial Communications English: A Competency Based Education Curriculum for the Limited English Proficient in Building Maintenance. ED 260784, Educational Resources Information Center (ERIC), June, 1985.

Ciancio, Jean, "Literacy: The Basic Skill," Vocational Education Journal, March, 1988, pp. 41-42.

Claus, Jeff, Renegotiating Vocational Instruction, ED 294009 Educational Resources Information Center (ERIC), April, 1988.

Clune, W. H., White P., and Patterson J., The Implementation and Effects of High School Graduation Requirements: First Steps Toward Curricular Reform, Rutgers University, Center for Policy Research in Education Research Report Series RR-011, New Brunswick, NJ, February, 1989.

Cohen, Arthur M., and Florence Brawer, Stepping-Stones to Student Success, 1989-1990: A Professional Development Plan for El Centro College, The American Community College, Second Edition, San Francisco: Jossey- Bass, Inc. Forthcoming book, Fall 1989. 48 pgs.

Cohen, David, "More Voices In Babel? Educational Research and The Politics of Curriculum," Phi Delta Kappan, March, 1990, pp. 518-522.

Committee for Economic Development (CED), Investing in Our Children: Business and the public schools, New York, 1985.

Competency Based Vocational Education in North Dakota, University of North Dakota, Department of Business and Vocational Education, Bismarck, November 1983.

Connections for the Future through Vocational Technical 2 + 2 Programs: Annual Report ED 307905, Educational Resources Information Center (ERIC), April, 1989.

Cooper,Bruce S., "Retooling Teachers: The New York Experience," Phi Delta Kappan, April, 1987, pp. 606-609.

Cooperman, Saul and Sybil Nadel, "The Academy: New Jersey Improves Professional Growth Opportunities for Teachers," Phi Delta Kappan, April, 1989, pp. 619-623.

Crabtree, Myrna P., Carolyn T. Maltby, Teacher's Guide for Home Economics Curriculum Competency Based Modules for Integrating Basic Skills in Reading, Writing, and Mathematics, ED 223819, Educational Resources Information Center, June, 1982.

Criteria for Describing and Assessing Competency Based Programs, National Consortium of Competency Based Education Centers, National Dissemination Center for Performance-Based Education, Syracuse University.

Cuban, Larry, "What I Learned from What I Had Forgotten About Teaching: Notes from a Professor," Phi Delta Kappan, February, 1990, pp. 479-482.

Davis, Beverly, "Time Out for Reading and Math," Vocational Education Journal, March, 1988, pp. 38-40.

DeFelice, Louise, "The Bibbidibobbidiboo Factor in Teaching," Phi Delta Kappa, April, 1989, pp. 639-641.

Developing Individualized Modules for Vocational-Technical Education: Learning Activity Guide, Vocational Curriculum Development Division of Instructional Services, Alabama Department of Education, Montgomery, Alabama, July, 1981, 13 pgs.

Dickson, Richard W. and Others, Individualizing Competency-Based Instructional Materials Management System, ED 290025, Educational Resources Information Center (ERIC), December 5, 1987.

Distance Inservice Training With Computer Conferencing, Center on Education and Training for Employment, The Ohio State Uni., 1900 Kenny Rd., Columbus, OH 43210, (614) 292-4353 or (800) 848-4815.

Distance Learning: Faculty Guide to Television Classrooms, Instructional Media Production Unit, Metropolitan Community College, Omaha, Nebraska, 1989.

Dodd, Anne Wescott and Eileen Rosenbaum, "Learning Communities For Curriculum and Staff Development," Phi Delta Kappan, January, 1986, pp. 380-384.

Doyle, Terrence J., Report on the Ferris State University Collegiate Skills Program: Three Year Findings of the Collegiate Skills Program's Impact on Academically High Risk General Studies Freshmen, ED 306972 Educational Resources Information Center (ERIC), 1989.

Drew, Rad A. and others, How To Gather and Develop Job Specific Literacy Materials for Basic Skills Instruction, A Practitioner's Guide, The Work-Education Bridge, ED 297160, Educational Resources Information Center (ERIC), 1988.

Dronka, Pamela, "Fusing Basic Skills with Vocational Education," Vocational Education Journal, Oct. 1988, pp.53-56.

Dunn, James A., "The Future of Secondary School Vocational Education: Curriculum Reform or Retrenchment-Basic Academic or Technical Skills," Journal of Studies in Technical Careers, Fall, 1988, Vol. X, N. 4. pp. 372-383.

Edmundson, Phyllis J., "A Normative Look at The Curriculum in Teacher Education," Phi Delta Kappan, May, 1990, pp. 717-720.

Eison, James, Fred Janzow, and Charles Bonwell, "Active Learning in Faculty Development Workshops: Or, Practicing What We Teach," Journal of Staff, Prog., and Org. Dev., Vol. 8, No. 2, Summer 1990, pp. 81-100.

Elbow, Peter, Embracing Contraries: Explorations in Teaching and Learning, Oxford University Press, New York, 1986.

Elliott, Ronald T. and Robert T. Benson, V-TECS Guide for Word Processing, South Carolina Department of Education, Division of Instruction, Office of Vocational Education, Columbia, South Carolina, 1986, 103 pgs.

Exam in a Can: Math Skills Series, IPS Publishing, Inc., Westlake Village, CA 91362.

Faculty Development, A Brochure, Guilford Technical Community College P. O. Box 309 Jamestown, North Carolina 27282, Oct. 1989.

Farr, Beatrice J., The Job Skills Education Program: Issues and Answers, U.S. Army Research Institute, Florida State Uni., 1982.

Forum On Integrating Occupational and Academic Education, Inservice education project, November, 1989, National Center for Research in Vocational Education, University of California, Berkeley, 26 pgs.

Freedman, Susan and Barbara Aschheim, Innovation with Impact: Industry-Education Partnerships in Massachusetts, Publication #15311, ED 309299, Educational Resources Information Center (ERIC), May, 1986.

Fretwell, David H., "Challenges to Implementing Competency-Based Vocational Training Programs in Developing Countries," Journal of Industrial Teacher Education, 1987, Vol. 24, N. 4 pp. 47-51.

Fryklund, Verne C., Occupational Analysis, Bruce Publishing Co., New York, 1970.

Frymier, Jack, Larry Barber, Bruce Gansneder, and Neville Robertson, "Simultaneous Replication: A Technique for Large Scale Research," Phi Delta Kappan, November, 1989, pp. 228-231.

Fuchs, Richard A. and Keith A. Manning, The Successful Job Hunter, Karli and Associates, Inc. and The Prudential Insurance Company of America, Dallas, Texas 75240, 1986.

Fuel Injection: Product Service Training, General Motors Corporation, May, 1987.

Gage, N. L., and David C. Berliner, "Nurturing the Critical, Practical, and Artistic Thinking of Teachers," Phi Delta Kappan, November, 1989, pp. 212-214.

Gallahger, Paul G. and Others, Profiling and Tracking Students in C/PBTE Programs: PBTE Technical Assistance Paper Series No. 2, ED 196864 Educational Resources Information Center (ERIC), May, 1976.

Gibbony, Richard A., "The Unscientific Character of Educational Research," Phi Delta Kappan, November, 1989, pp.225-227.

Glaser, Robert, "Cognitive and Environmental Perspectives on Assessing Achievement," Princeton, N.J.:Educational Testing Service, 1988, pp. 40-42.

Glover, Robert W. and Elaine Shelton, Alternance Training in Texas: A Preliminary Overview, Center For The Study of Human Resources, The University of Texas, Austin, Texas 78712, (512) 471-7891, August, 1987.

Goodwin, David, Postsecondary Vocational Education, Final Report, Vol. I-IV, National Assessment of Vocational Education, U.S. Department of Education, 1989.

Gosvenor, Raymond G. and Brad Thode, "Vocational/Academic Team Teaching," Vocational Education Journal, August, 1986, pp. 39-41.

Gow, Bradford Haven, "The True Purpose of Education," Phi Delta Kappan, March, 1989, pp. 545-546.

Gray, Donald J., "Writing Across the College Curriculum," Phi Delta Kappan, June, 1988, pp. 729-733.

Grasso, J. and Shea, J., Vocational Education and Training: Impact on Youth, Carnegie Council on Policy Studies in Higher Education, 1979.

Greenan, James, Debrah Jefferson, and James Toth, "Needs of Vocational Personnel in Assessing Students' Reasoning Skills," Journal of Studies In Technical Careers, Fall, 1989, Volume XI Number 4, pgs. 333-341.

Greenwood, Katy Brown, Preparing For The 1990's: Literacy Program Development In Post-Secondary Institutions, A Project Developed For The Texas Higher Education Coordinating Board, University of Houston, Houston, Texas, Center For Applied Technology, June, 1989.

Grubb, W. Norton, "Integrating Academic and Vocational Education," BEACON, American Vocational Education Research Association, Volume 23, Issue 2, Sangamon State University, Springfield, IL 62794-9243, June, 1990.

Grubb, W. Norton, "Model for Integrating Academic and Vocational Education," Beacon, American Vocational Education Research Association, Volume 23, Issue 2, Sangamon State University, Springfield, IL 62794-9243, June, 1990.

Grubb, W. N., "Hope Deferred is Hope Denied," The Phoenix of Vocationalism, Spring, 1978.

Grubb, W. N. (1989), "Preparing Youth for Work: The Dilemmas of Education and Training Programs, In Stern, D. and Eichorn, D. (Eds.), "Adolescence and Work: Influences of Social Structure, Labor Markets, and Culture, New Jersey: Lawrence Erlbaum Associates."

Grubb, W. N., and Lazerson, M., "Rally `round the workplace: Continuities and Fallacies in Career Education," Harvard Educational Review, Vol. 45 No. 4, pp. 451-474, November, 1975.

Grubb, W. N., Gary Davis, Jeannie Lum, Jane Plihal, and Carol Morgaine,"THE CUNNING HAND, THE CULTURED MIND": MODELS FOR INTEGRATING VOCATIONAL AND ACADEMIC EDUCATION, Berkeley, CA., National Center for Research in Vocational Education, Draft, March, 1990.

Hamilton, James B. and Karen M. Quinn, Resource Person Guide to Using Performance-Based Teacher Education Materials, Professional Teacher Education Module Series, The Center for Vocational Education, The Ohio State University, Columbus, 1978, 124 pgs.

Hammons, Jim, Resurrection is More Difficult Than Giving Birth: Select Good People," 1990 NISOD International Conference on Teaching Excellence and Conference Administrators, Austin, Texas, May 20-23, 1990. 5 pgs.

Haney, Walter, "Making Testing More Educational," Educational leadership, October, 1985, pp. 4-13.

Haney, Walter and George Madaus, "Searching for Alternatives to Standardized Tests: Whys, Whats, and Whithers," Phi Delta Kappan, May, 1989, pp. 683-687.

Harmon, David, "Learning in the Workplace, Finding the `propitious moment' to link education with specific situations," Teachers College, Columbia University.

Harrington, Lois G. and Others, Train Educators to Install Competency-Based Vocational Instruction, Module CBI-101,The Center for Vocational Education, Ohio State University, Columbus, Ohio, February, 1977.

Havercamp, Mary Foster, "Twin Strategies for Reading Improvement," Vocational Education Journal, March, 1988, pp. 36-37.

Heiman, Terry W., "Do You Teach The Basics?" The Agricultural Education Magazine, May, 1987, p.4.

Henderson, Howard, "The Madison Workshops: One Approach to Staff Development," Phi Delta Kappan, January, 1986, pp. 384-385.

Hinds, Joyce, Prerequisite skills for Postsecondary Vocational Programs, Vernon Regional Junior College, Vernon, Texas, June 1989, 90 pgs.

Huffstutler, E. Vaughn and Earl McCallon, IN-SERVICE EDUCATION FOR ACADEMIC TEACHERS OF CVAE, An Evaluation Report, EPD Consortium D, Richardson, Texas, 1972-1973. 38 pgs.

Hull, William L., Judith A. Sechler, Adult Literacy: Skills for the American Work Force, Research and Development Series No. 265B, ED 284980 Educational Resources Information Center (ERIC), 1987.

IMPLEMENTING COMPETENCY-BASED EDUCATION IN VOCATIONAL PROGRAMS, A Guide, Virginia Department of Education, Division of Vocational and Adult Education, Virginia Tech., Blacksburg, Virginia 24061, July, 1982.

Improvement for Undergraduate Education in Texas: College Level Competencies, Fund for the Improvement of Higher Education (FIPSE), Texas Higher Education Coordinating Board, Austin, June, 1989, 74 pgs.

Improving The Communications, Mathematics, and Science Competencies of Students Enrolled in Vocational Courses, Linking Vocational and Academic Education, Southern Regional Education Board, Atlanta, Georgia 30318-5790, 1989.

Jennings, John F., "Basic Skills Misunderstanding," Vocational Educational Journal, September, 1990. p. 6.

Johnstone, David, "Curriculum Considerations Since Warnock: Towards a Negotiated Understanding," The Vocational Aspect of Education, December, 1988 XL (107), pp.111-115.

Jones, Rose L., "Beating The Basics Blues," The Agricultural Education Magazine, May, 1987, pp. 10-12.

Journal of Studies in Technical Careers, College of Technical Careers, Southern Illinois University at Carbondale, Carbondale, Illinois.

Kienast, Kay E. and Bill E. Lovelace, Vocational Education Personnel Development Needs For Working With The Handicapped, U.S. Department of Education, Office of Vocational and Adult Education, Educational Innovators, Inc. Richardson, Texas, August, 1981. 224 pgs.

Kohrmann, Marie, Adult Literacy Project: Mathematics For Vocational Nursing, Tutorial Modules, Grayson County College, Sherman-Denison, Texas, 1988.

Killingsworth, Jimmie, Donald H. Cunningham, and Laurie L, Jones, Designing Writing Assignments for Vocational-Technical Courses, A Guide for Teachers in the Two-Year College and Technical Institute, The West Texas Project in Writing across the Curriculum, Lubbock, Texas, 1988, 203 pgs.

Klingman, Peter D. and Aubrey W. Gardner, Modifications in the DACUM Process of Curriculum Development at Daytona Beach Community College, ED 235844 Educational Resources Information Center (ERIC), 1982.

Lambert, Linda, "Staff Development Redesigned," Phi Delta Kappan, May, 1988, pp. 665-668.

Landsmann, Leanna, "10 Resolutions for Teachers," Phi Delta Kappan, January, 1988. pp. 373-374.

Lettow, Dennis J., "Competency Identification In Agribusiness," The Agricultural Education Magazine, 1989, pp. 14-15.

Linebarger, Lillian T., Coordinated Vocational Academic Education, Final Report, Summer Institute, EPD Consortium D P.O. Box 1300, Richardson, Texas 75080, 1977, 279 pgs.

Literacy Is For Everyone, Project Life, Final Report, South Plains College, Lubbock, 1987-1988.

Lovelace, Bill E., A Directory of Reported Professional Improvement Activities For Postsecondary Technical/Vocational Personnel, School of Human Resource Management, University of North Texas, Denton, Texas, June 30, 1990.

Lovelace, Bill E., David Ingram, and Victoria Oglesby, 2+2 Articulated Curriculum for Health Occupations: A How-To-Manual, The Texas Higher Education Coordinating Board, Community College and Technical Institutes Division, coordinating board project number 00110006, Austin, Texas.

Lowry, Cheryl Meredith, Robert E Mullen, Billie J. Hooker, and Louise Vetter, The Self-Reported Preparation of Recent Vocational Teacher Education Graduates To Instruct Exceptional Students, The National Center for Research in Vocational Education, The Ohio State University, Columbus, Ohio, 1983, 115 pgs.

Mathematical Development, Secondary Survey Report No. 1: Assessment of Performance Unit, Department of Education and Science, London, 1980, pp. 98-108.

McBryde, Neal M., and Pat S. Sugarek, Bee County College Competency-Based Skills Curricula for Disadvantaged Adults: Welders, Texas Higher Education Coordinating Board, Community Colleges and Technical Institutes Division, Austin, Texas, 1988.

McCormick, Floyd G., "Whether Competency-Based Instruction," The Agricultural Education Magazine, March, 1989, pp. 6-8.

McKenna, Joseph F., "Two Heads Thinking As One," Industry Week, September, 1990, pp. 93-94.

McLean, Leslie D. and Harvey Goldstein, "The U.S. National Assessments In Reading: Reading Too Much Into the Findings," Phi Delta Kappan, January, 1988, pp. 369-372.

McLemore, Laura, Adult Literacy Project: Developmental Writing Module, Grayson County College, Sherman-Denison, Texas, 1988. 95 pgs.

Meyer, R., "An Economic Analysis of High School Education," In The Federal Role In Vocational Education: Sponsored Research, National Commission for Employment Policy, Washington, D.C., 1981.

Miller, Charles, "Higher-Order Thinking: An Integrated Approach for Your Classroom," Vocational Education Journal, October, 1990.

Munroe, Duncan L. and J. Price, VIDEO for INSTRUCTORS, 10110 Lakeridge Dr., Austin, Texas 78733, 1988, 52 pgs.

"National Conference on Competency-Based Testing and Performance Standards for Vocational-Technical Education," Vocational-Technical Education Consortium of States, Commission on Occupational Education Institutions, Southern Association of Colleges and Schools, Decatur, GA 30033-4097, (800) 248-7701, April 30- May 2, 1990.

Newberger, Darryl A., "Learning Disabilities and Competency-Based Instruction: Intertwined or Poles Apart?" Journal of Learning Disabilities, August/September, 1983, pp. 393-397.

O'Brien, Terrance, "Significance of Selected Variables in the Design of Sampling Strategy for Occupational Analysis," Journal of Studies in Technical Careers, Fall, 1989, Vol. XI N.4 pp. 343-356.

Occupational Survey Report: Occupational Analysis Program, Programming Specialty, AFS 511X1, AFPT 90-511-413, Volume II of III, USAF Occupational Measurement Center, Air Training Command, Randolph AFB, Texas, May, 1980.

Open Entries, A Competency-Based Education Information Exchange, Center on Education and Training for Employment, The Ohio State University, 1900 Kenny Rd. Columbus, Ohio 43210.

OSAS (Occupational Skills Analysis System), Educational Data Systems Incorporated, 22720 Michigan Ave., Dearborn, Minnesota 48124, (313) 277-2742.

Owens, Thomas, and Larry McClure, New Developments In Improving the Integration of Academic and Vocational Education, Northwest Regional Educational Laboratory, Portland, Oregon, Aug. 1, 1989, 25 pgs.

Parkay, Forrest W., "A School/University Partnership That Fosters Inquiry-Oriented Staff Development," Phi Delta Kappan, Jan. 1986, pp. 386-389.

Parker, Robert and James Sands, Lake County Area Vocational Center Computer-Managed Instructional System for Competency-Based Vocational Education. Version 1.1 Instructor Guide, ED 260224 Educational Resources Information Center (ERIC), June, 1985.

Pellegrino, James P., "Literacy Is Vital To Survival In The Technical Classroom and Workplace," NASSP Bulletin, September 1988, pp 88-94.

Pepple, Jerry D., "Applied Basics Curricula in Vocational Education: Validation of Student and Program Outcomes," Beacon, American Vocational Education Research Association, Vol. 23, Issue 2, Sangamon State University, Springfield, IL 62794-9243, June, 1990.

Pincus, Fred L., Tracking and Vocational Education in Community Colleges, ED 175504 Educational Resources Information Center (ERIC), 1978.

Plan the Student Teaching Experience, Module 1-7, The Center for Vocational Education, Ohio State University, Columbus, Ohio, 1978, 40 pgs.

PLATO Education Group, Summary of Activities, 1982-83, ED 234753 Educational Resources Information Center (ERIC), February, 1983.

Pogrow, Stanley, "Challenging At-Risk Students: Findings from the HOTS Program," Phi Delta Kappan, January, 1990, pp. 389-397.

Polto, John A., "Full-Scale Curriculum Integration," Vocational Education Journal, March, 1988, pp. 30-32.

Powell, A. G., Farrar, E. and Cohen, D. K., The Shopping Mall High School: Winners and Losers in the Educational Marketplace, Boston: Houghton Mifflin, 1985.

Popham, James, W., Keith L. Cruse, Stuart C. Rankin, Paul D. Sandifer, and Paul L. Williams, "Measurement-Driven Instruction: It' on the Road," Phi Delta Kappan, May, 1985, pp. 628-634.

Preparation of Occupational Instructors: A Suggested Course Guide, U.S. Department of Health, Education, and Welfare, Office of Education, Division of Vocational and Technical Education, Manpower Development and Training Program, U.S. Government Printing Office, Supt. of Doc. Catalog No FS 5.280:80042, January, 1970.

Preparing Texas For the 21st Century Through A Skilled and Educated Work Force, Texas Quality Work Force Planning, A Tri-Agency Initiative by the Texas Education Agency, Texas Higher Education Coordinating Board, and Texas Department of Commerce, Presented to the Legislative Budget Board, July 5, 1990. 17 pgs.

Pritz, Sandra G., "Basic Skills: The New Imperative," Vocational Education Journal, March, 1988, pp. 24-26.

Proceedings For Forum On Integrating Occupational and Academic Education, In-Service Education Project, National Center for Research in Vocational Education, University of California, Berkley, November, 1989, 26 pgs.

Pucel, David J., Susan H. DeVogel, and John Persico, Visions for Change, The Context and Characteristics of Postsecondary Vocational Education Curriculum in the Year 2000: Implications for Policy, Minnesota Research and Development Center For Vocational Education, Department of Vocational and Technical Education, University of Minnesota, St. Paul, February, 1988, 26 pgs.

"Research Cites Six Mistakes of Education and Training," Vocational Education Weekly, Formerly Legislative Brief, American Vocational Assoc., May 28, 1990, Vol. III, No. 9, p. 3.

Resnick, Lauren B., "Understanding Achievement and Acting to Produce It: Some Recommendations for the NAEP," Phi Delta Kappan, April, 1988, pp. 576-579.

Resource Bulletin for Educators, New Forums Press, Inc., P.O. Box 876, Stillwater, OK 74076.

Reubens, B., "Vocational Education for All in High School? In O'Toole, Work and The Quality of Life, Boston: MIT Press, 1974, pp. 299-337.

Rheault, K. W. and W. W. Miller, An interview with Clarence E. Bundy, "Sound Principles of SOE: Past, Present, and Future. The Agricultural Education Magazine, 1983, 55 (9).

Rogers, Phil, "How Can A Student `Fail' To Be Educated?" Phi Delta Kappan, February, 1989, pp. 478-479.

Rose, Dennis M., "Graduation Credit for Applied Academics," Vocational Education Journal, March, 1988, pp. 33-35.

Roth, Gene and Dennis Tesolowski, Planning, Executing, and Evaluating Competency-Based Instruction. Microcomputer Applications for Vocational Teachers: A Competency-Based Approach--Book C, Information Center (ERIC), June, 1986.

Roth, Gene and Dennis,Tesolowski, Planning and Organizing the Vocational Education Learning Environment for Competency-Based Instruction, Microcomputer Applications for Vocational Teachers: A Competency-Based Approach--Book D. ED 281024, Educational Resources Information Center (ERIC) June, 1986.

Roth, Gene and Dennis Tesolowski, Performing Classroom Management Functions with Competency-Based Instruction, Microcomputer Applications for Vocational Teachers: A Competency-Based Approach--Book E, ED 281025, Educational Resources Information Center (ERIC), June, 1986.

Rumberger, R. W. and Daymont, T., (1984), "The Economics of Academic and Vocational Training Acquired in High School," In M.E. (Ed.), Youth and the Labor Market: Analyses of the National Longitudinal Study, Kalamozoo, MI: W.E. Upjohn Institute for Employment Research.

Ryle, Gilbert, The Concept of Mind, Hutchinson Press, London, 1949.

Selvidge, R. W., How to Teach a Trade, C. A. Bennett Co., Peoria, Ill., 1923.

Shaver, James P., "Chance and Nonsense: A Conversation About Interpreting Tests of Statistical Significance, Part 2," Phi Delta Kappan, October, 1985, pp. 138-141.

Shelby, Susan and Mary Johnson, "Tying It All Together," Vocational Educational Journal, March, 1988, pp.27-29.

Singer, Elizabeth and others, Competency-Based Adult High School Completion Student Services Guide, ED 270165 Educational Resources Information Center (ERIC), 1985.

Sirotnik, Kenneth, A., "On the Eroding Foundations of Teacher Education," Phi Delta Kappan, May, 1990, pp. 710-716.

Snyder, Lester M., The Basic/Essential Skills Taxonomy, Second Edition, Arizona State University, July, 1989, 90 pgs.

Snyder, Lester M., Jr., EQUIVALENCY CREDIT, Arizona State University, July, 1989.

SOCAT, (Student Occupational Competency Achievement Testing), National Occupational Competency Testing Institute, Ferris State University, Big Rapids, Michigan 49307, (616) 796-4695, (800) 334-6283.

Social Studies, Vocational Related Activity Sheets, Occupational Curriculum Lab, Center for Vocational Education, Department of Secondary and Higher Education, East Texas State University, Commerce, Texas 75428, 1975-1976.

Solmon, L. C., New Directions for Education and Work: Reassessing the Link Between Work and Education, San Francisco: Jossey-Bass, 1978.

Spence, David S., "Rethinking the Role of Vocational Education," Educational Horizons, Fall, 1986, pp. 20-23.

Stasz, Cathy, David McArthur, Matthew Lewis, and Kimberly Ramsey, "Can Academic and Vocational Curriculum be Integrated?: Lessons from a Study of Generic Skills Teaching," BEACON, American Vocational Education Research Association, Vol. 23, Issue 2, June, 1990, Sangomon State University, Springfield, IL 62794-9243.

State Plan for Federal Vocational Education Funding, Fiscal Years 1989-1990, Texas Education Agency, Austin, Texas, June 1988.

Statement of Principles and Standards For The Postsecondary Teaching of Writing, A conference on college composition and communication, October, 1989, National Council of Teachers of English, Urbana, Illinois.

Stern, D., Hoachlander, G. E., Choy, S. and Benson, C., One Million Hours A Day: Vocational Education in California Secondary Schools. (Policy paper no. PP 86-3-2), Berkeley, CA: Policy Analysis for California Education, March, 1986.

Stenner, A. Jackson, Ivan Horabin, Dean R. Smith, and Malbert Smith, "Most Comprehension Tests Do Measure Reading Comprehension: A Response to McLean and Goldstein," Phi Delta Kappan, June, 1988, pp. 765-767.

Sternberg, Robert J., "Thinking Styles: Keys to Understanding Student Performance," Phi Delta Kappan, January, 1990, pp. 366-371.

Stewig, John Warren, "Reaching for Links That Foster Strength and Stability," Phi Delta Kappan, May, 1985, pp.640-642.

Strategic Plan: Fiscal Years 1990-2000, Texas Department of Commerce, Austin, Texas, June, 1990.

Strother, Deborah Burnett, "On Listening," Phi Delta Kappan, Apr. 1987, pp. 625-628.

Suhor, Charles, "Objective Tests and Writing Samples: How Do They Affect Instruction in Composition?" Phi Delta Kappan, May, 1985, pp. 635-639.

Task Analyses, Virginia Vocational Curriculum Resource Center, 2200 Mountain Road, Glen Allen, Virginia 23060-2208, (804) 262-7439.

Task List Verification Techniques, East Central Curriculum Center, Sangamon State University, F-2, Springfield, Il. 62794-9243, (217) 786-6375.

Taylor, Denny, "Toward a Unified Theory of Literacy Learning and Instructional Practices," Phi Delta Kappan, November, 1989, pp. 184-193.

TEAMS (Texas Educational Assessment of Minimum Skills) Interpreting Assessment Reports, Texas Education Agency, Austin, Texas, 1987-1988. 43 pgs.

Texas Academic Skills Program (TASP), National Evaluation Systems, Inc., In Cooperation with Texas Higher Education Coordinating Board and Texas Education Agency, Austin, 1989, 593 pgs.

Training Extract, Medical Service, Aeromedical AFSC 902X0C, AFPT: 90-902-737,USAF Occupational Survey Branch, USAF Occupational Measurement Center, Randolph AFB Texas, June, 1986.

Travers, Eva Foldes and Susan Riemer Sacks, "Joining Teacher Education and The Liberal Arts in the Undergraduate Curriculum," Phi Delta Kappan, February, 1989, pp. 470-474.

Traylor, Judy G. and Glenda Ballard, The WRITING On The Wall, A Model Integrated Adult Competency-Based Education Program Using State-of-the-Art Technology, Texas Education Agency, Division of Adult and Community Education Programs, Austin, Texas,

"U.S. Transition to Work Seen As Worst in World," Vocational Education Weekly, Formerly Legislative Brief, American Vocational Association, May 28, 1990, Vol. III, No. 9, p. 2.

"Vocational Curriculum Booster," DACUM (Developing A Curriculum) Resource Center, Dundalk Community College, 7200 Sollers Point Rd., Baltimore, MD 21222, (301) 282-6700.

Vocational Needs Assessment: A Planning Process, ED 253723 Educational Resources Information Center (ERIC), June, 1984.

Vocational Preparation and Occupations: Third Edition, Volume 1, Educational and Occupational Code Crosswalk, (G.E.D.) Third Edition, Volume I, National Occupational Information Coordinating Committee, December, 1982, 423 pgs.

VOCATS (Vocational Competency Achievement Tracking System), Statewide Implementation of A Computer-Managed Competency-based Core Curriculum With Locally-customized Instructional Plans for Personalized Student Learning and Reporting in Vocational-Technical Education, Department of Public Instruction, Division of Vocational Education Services, Raleigh, North Carolina.

Walberg, Herbert J., "Productive Teaching and Instruction: Assessing The Knowledge Base," Phi Delta Kappan, February, 1990, pp. 470-478.

Watson, Bruce and Richard Konicek, "Teaching for Conceptual Change: Confronting Children's Experience," Phi Delta Kappan, May, 1990, pp. 680-685.

Weaver, W. Timothy and George M. Prince, "Synectics: Its Potential For Education," Phi Delta Kappan, January, 1990, pp. 378-388.

Weber, James M., Nancy Puleo, and Paula Kurth, "A Look at Basic Academic Skills, Reinforcement/Enhancement Efforts in Secondary Vocational Classrooms," Journal of Vocational Education Research, Winter 1989, Vol. 14, No. 1, pp. 27-47.

Weber, Wilford A., et al. A Guide To Competency Based Teacher Education, Competency Based Instructional Systems, Westfield, Texas, 1973.

Webster's Ninth New Collegiate Dictionary, Merriam-Webster Inc., Springfield, Massachusetts, 1988.

What Do We Know About Standards for Effective Basic Skills Programs? U.S. Department of Health, Education, and Welfare, Office of Education, Basic Skills Improvement Program, August, 1979, 38 pgs.

What Have We Learned? Update on the SREB State-Vocational Education Consortium, Linking Vocational and Academic Education, Southern Regional Education Board, 592 Tenth Street, N.W., Atlanta, Georgia, 30318-5790, 404/875-9211.

Wiggins, Grant, "Creating a Thought-Provoking Curriculum," American Educator, Winter 1987, pp. 10-17.

Wiggins, Grant, "Rational Numbers: Scoring and Grading That Helps Rather Than Hurts Learning," American Educator, Winter, 1988, pp. 20, 25, 45, and 48.

Woodward, C.M., The Manual Training School, D.C. Heath and Co., 1887.

"Workplace Basics Conference": Summary of a Conference on the Employment and Training Needs of the 1990s, ED 314597 Educational Resources Information Center (ERIC), October, 1,989.

Zuga, Karen F., Michael R. Lindstrom, A Tentative Framework of General Work Knowledge, Skills and Attitudes for Secondary Vocational Education, ED 309261 Educational Resources Information Center, July, 1989.